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ECONOMIC INTELLIGENCE REPORT

THE IRON AND STEEL INDUSTRY OF EAST GERMANY

CIA/RR 62

26 September 1955

CENTRAL INTELLIGENCE AGENCY

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(ORR Project 23.462)

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FOREWORD

This report provides a comprehensive survey of the postwar development of the iron and steel industry of East Germany and its current position as a contributor to the economy of the Soviet Bloc. The period covered is primarily that of the current Five Year Plan (1951-55); some earlier data are given to provide perspective.

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THE IRON AND STEEL INDUSTRY OF EAST GERMANY*

Summary

Steel production in East Germany of 2.6 million metric tons** in 1954 was an increase of 6.1 percent over 1953 and represented 22 percent of the output of the European Satellites and 4.7 percent of that of the Soviet Bloc. Although no more in quantity than would be produced in a single modern integrated steel plant, the East German output is scattered among 8 facilities (excluding foundries), only 1 of which is integrated.

The most serious handicap of the East German iron and steel industry is the almost complete absence of an adequate raw materials base. This is not surprising, in that the area before partition was heavily dependent on West Germany and Lorraine for raw materials as well as for finished steel.*** In 1954, approximately 50 percent (in terms of iron content) of the iron ore supply of East Germany was imported, principally from Krivoy Rog, a much longer haul than Lorraine. Nearly 90 percent of its metallurgical coke was also imported. Furthermore, attempts to use low-grade domestic iron ore and coal have resulted in heavy investments in unconventional processing plants that have thus far failed to produce a satisfactory product. In addition, no manganese and only insignificant quantities of alloying materials are produced domestically.

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* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 June 1955.

** Throughout this report, tonnages are given in metric tons.

*** Finished steel includes finished steel castings and all hot or cold rolled shapes such as strip, sheets, bars, tubes, rails, and structural shapes. Semifinished steel is steel which has been reduced from the ingot but requires further processing to produce a finished steel shape. The most common forms are blooms, billets, and slabs. Crude steel includes ingots and steel for castings.

These conditions are further complicated by poor planning and inept political management and are compounded by an apparent lack of enthusiasm for the regime on the part of operating personnel. The result is a high-cost industry subsidized to the extent of approximately 50 percent of the value of its output. Its products are generally of unsatisfactory quality, and in 1954 it failed by about 30 percent, or 720,000 tons of finished steel, to meet the requirements of the steel-consuming industries of East Germany.

In spite of the fact that production is inadequate, East German steelmaking capacity is not being fully utilized. It is estimated that this part of the industry produced at the rate of only 79 percent of capacity in 1954. Although it is not certain how much production was lost because of the poor quality of the materials used, it is clear that supplies of ferrous metallics (pig iron and scrap) were insufficient to support capacity operation. In addition to pig iron, the 1954 plan provided for the import of 240,000 tons of steel in ingot form. Because about 70 percent of the imported steel was to have been of electric furnace grades, which are usually alloyed or of special quality, a lack of the scarcer alloying materials no doubt provided an additional reason for the import of this expensive material.

Finished steel production is also inadequate for requirements. The 1,786,000 tons produced in 1954 supplied approximately 70 percent of the finished steel consumed. The deficiency was filled by imports, 80 percent of which were furnished by Soviet Bloc countries, the USSR being the dominant supplier. Further evidence that production deficiencies extend to alloy as well as carbon grades is provided by the failure to meet the finished alloy steel production plan in 1953 by 26 percent.

With the advent of the "new course" in 1953, expansion of and investment in the iron and steel industry were curtailed considerably. Latest information indicates that this policy of curtailment will be continued throughout 1955. If major expansion of the industry is resumed, it would logically be directed toward making up deficiencies in facilities for the production of pig iron and finished steel until steelmaking capacity is more fully utilized.

The 1955 goals, revised downward in 1953 to 1.85 million tons of pig iron and 3 million tons of crude steel, are not expected to be fulfilled. It is estimated that 1955 production will be 1.5 million tons of pig iron and 2.72 million tons of crude steel.

Because East Germany is a heavy importer of both iron and steel-making materials as well as of finished steel, its iron and steel industry is a contributor to the economy of the Soviet Bloc only to the extent that it provides materials for East German manufacturing industries, much of whose output is exported to Bloc countries. The net economic value of this support is, however, greatly impaired by high production costs and the consequent necessity for heavy subsidization.

In addition to its economic weaknesses, the industry is potentially vulnerable because of the concentration of its principal sources of raw materials in Poland and the USSR, of its pig iron production in three plants, and of its ferromanganese, ferrochrome, and ferrosilicon capacity in one plant at Lippendorf.

I. Introduction.

A. Significance.

In 1936 the manufacturing industries of the area which now constitutes East Germany consumed more than 3 million tons of finished steel. Only 40 percent of this amount was produced in the present Soviet Zone, the balance being shipped in from the large steel-producing centers of West Germany.

Following World War II, dismantling and demolition of steel plants by the USSR reduced steelmaking and rolling capacities by approximately 85 percent. 1/* As a result, East Germany was left with a very meager steel production to support a relatively large manufacturing industry. The separation of the New England states from their steel sources in Pennsylvania and New York would create a somewhat analogous situation.

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By 1954 the East German steel industry had been sufficiently rehabilitated and expanded to produce 70 percent of the finished steel consumed.

Although handicapped by the high cost of raw materials and by inept political management, the East German steel industry provides an important material base for military and industrial production.

B. History and Development.

In prewar Germany the steel industry was centered largely in what is now West Germany because of its proximity to the coal and iron deposits of the Saar and Lorraine. In 1938 the area that is now East Germany produced only about 1.7 million tons of steel, 8.6 percent of the total German production. 2/

During the war there were no important changes in the industry. When Germany collapsed in 1945, the following iron and steel plants existed in what is now East Germany: Maxhuette (Unterwellenborn), Thale, Riesa, Brandenburg, Groeditz, Doehlen, Wilhelm Florin (Hennigsdorf), Copitz (Pirna), Finow Rolling Mill, and a number of iron and steel foundries. 3/

The capacity of the iron and steel industry in East Germany was only slightly reduced as a result of war damage, but the Potsdam Agreement was used by the USSR as authority to reduce total steel capacity by more than 80 percent. Thus the most important steel works and rolling mills in East Germany were dismantled or destroyed. These included all of the plants mentioned above except Maxhuette and Thale, which were not under Soviet control at that time.

In 1946, after Soviet dismantling and destruction, the East German steel industry had been reduced to approximately 250,000 tons of ingot capacity and 100,000 tons of rolling capacity and had only one integrated plant, Maxhuette.

During the 1947-49 period, Soviet policy shifted to one of reconstruction of the iron and steel industry. This change was largely the result of Soviet demands for reparations goods from the manufacturing industries.

Before the change in trade relations caused by the Korean War, reconstruction was aided by procurement of equipment from the West and by the return of some facilities from the USSR. By the beginning of 1951 the industry had been restored to prewar capacity.

In October 1951 a long-range plan of expansion of the steel industry was announced. The completion of this plan was to culminate in 1955 production of 1.3 million tons of metallurgical coke, 2 million tons of pig iron, 3.1 million tons of crude steel, and 2.2 million tons of finished steel. 4/

By 1953, particularly after the East German riots in June, the production plans were revised along somewhat more realistic lines. The 1955 goals for pig iron and crude steel were reduced to 1.85 million tons and 3 million tons, respectively. 5/ The 1953 revisions made no mention of coke and finished steel. Analysis indicates that 1955 production will fall considerably short of these aims. Actual production is estimated as follows: coke, 267,000 tons; pig iron, 1.5 million tons; crude steel, 2.7 million tons; and finished steel, 1.9 million tons.

At the time production plans were revised, investments in the steel and allied mining industries were also curtailed. Investments decreased from 338.5 million DME (Deutsche Mark East) in 1952 to 170.1 million DME in 1953.* 6/

II. Organization and Policy.

A. Organization.

Following World War II the Soviet Military Administration in Germany established a Central Administration for Industry with a Department of Basic Industries which controlled the iron and steel industry in East Germany. In 1946, certain iron and steel plants were placed under the jurisdiction of the Soviet Joint-Stock Companies (SAG's). In 1948 the Federation of People-Owned Enterprises (VVB) was established, and those iron and steel facilities not controlled by the SAG's were placed under the jurisdiction of various branches of VVB.

* For further details, see Appendix A, Table 34, p. 73, below.

When East Germany was established in 1949, operation of the iron and steel industry (except that portion under the SAG's) was included with other industries under the Ministry for Industry. 7/ In November 1950 this ministry was divided into three parts, one of which, designated as the Ministry for Heavy Industry, included iron and steel. A year later, iron and steel were placed under a new ministry, the Ministry for Metallurgy and Ore Mining. This Ministry lasted 2 years and included all related ore mining and smelting as well as operation of all steel plants except those under the SAG's.

A reorganization in November 1953 vested responsibility for the metallurgical industry -- as well as the coal, power, and chemical industries -- in the Ministry for Heavy Industry. In the Production Area for Metallurgy* is the Main Administration for the Iron Industry, which has control of the iron and steel plants and of ore mining and refining. 8/ (See Figure 1.**) On 1 January 1954, all iron and steel plants which had been under the SAG's were returned to the German people and placed under control of the Main Administration for the Iron Industry.

Throughout all of these changes, direction of the iron and steel industry has remained with Fritz Selbmann, who is currently Minister for Heavy Industry and a member of the Presidium of the Council of Ministers.

B. Policy.

The 1955 plan adopted on 20 December 1954 by the East German Council of Ministers endorsed a continuation of the policy of emphasizing production of consumer goods. Allocation of investments in industrial expansion is to emphasize energy fuels and chemicals, the same industries which have been favored since the formation of the "new course" policy. This would indicate that expansion of the iron and steel industry has been further de-emphasized. Increases in production, therefore, must come principally from greater efficiency of operations and higher productivity of labor. 9/

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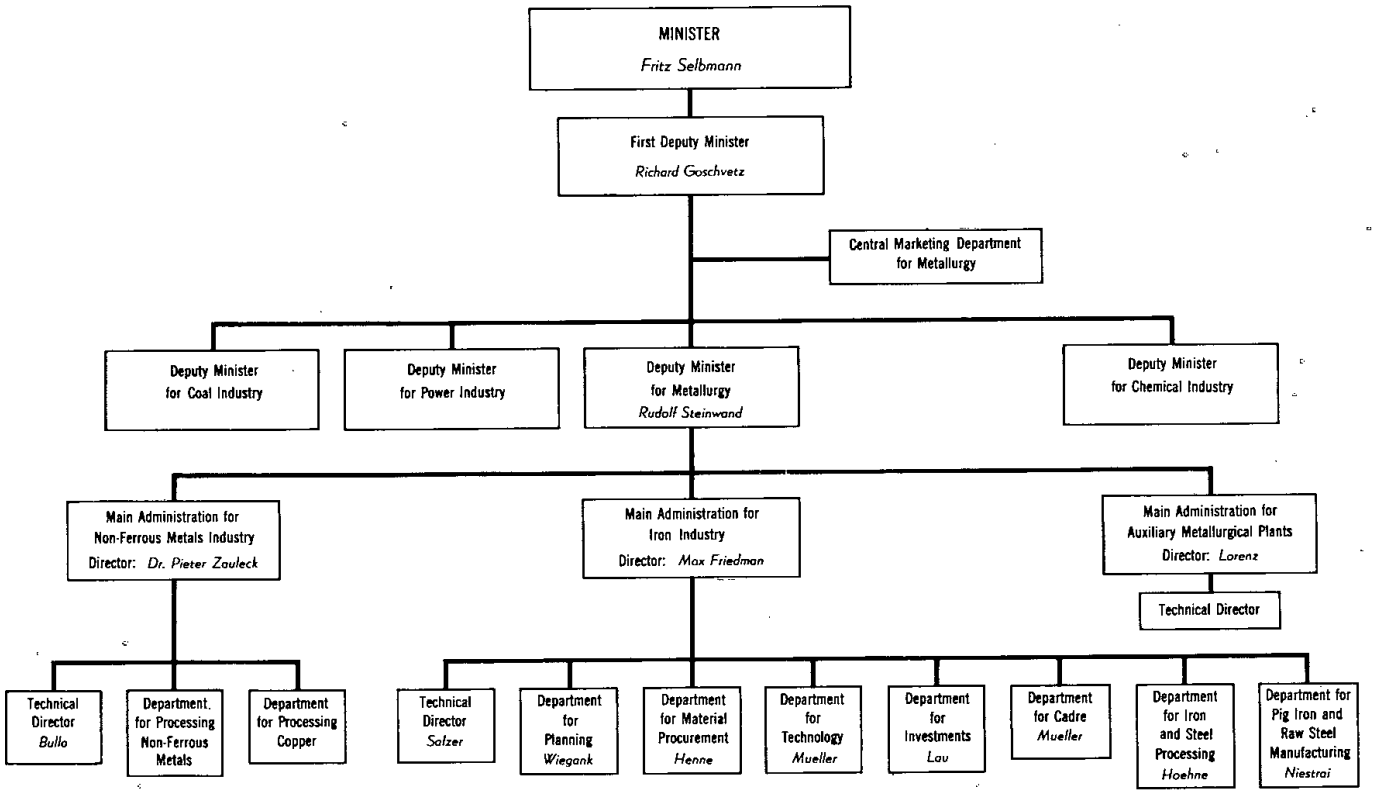
* The Production Area for Metallurgy consists of those Main Administrations under the jurisdiction of the Deputy Minister for Metallurgy.
** Following p. 6.

Figure 1

EAST GERMANY
MINISTRY FOR HEAVY INDUSTRY
1954



In view of the lower costs of West German iron and steel production, a probable reunification of the country would logically cause the abandonment of plans for expansion of the East German industry. A repetition of conditions that provoked the riots of June 1953, moreover, would result in loss of production and, perhaps, of facilities.

The continuance of poor planning and mismanagement, which partially account for high production costs in the industry, will prevent greater utilization of present capacity.

III. Production and Supply of Iron and Steel.

From a capacity of approximately 250,000 tons of ingots and 100,000 tons of rolled steel in 1946 the East German steel industry has been rehabilitated and expanded to an estimated capacity of 3.3 million tons of ingots in 1954. Only 2.6 million tons were produced, however, principally because of a shortage of pig iron and scrap.

A comparison of total German and East German production of iron and steel in 1938 and 1954 is shown in Table 1.*

The relation of steel production in East Germany to that in other areas of the world in 1954 is shown in Figure 2.**

Development of an iron and steel industry based on a limited and inferior supply of raw materials has invited experimentation with unconventional practices. Some of these have been far from successful, notably the low-shaft blast furnaces at Calbe and the Lauchhammer Coke Plant which was designed to produce metallurgical-grade coke from brown coal.

In spite of these handicaps, the East Germans have increased their crude steel production from 332,000 tons in 1948 to 2.6 million tons in 1954. This is 53.4 percent more than the prewar production of 1.7 million tons in 1938 and provides 70 percent of finished steel consumption compared with only 40 percent in 1938. This has not, however, been a natural growth but one forced on a high-cost basis supported by heavy subsidization.

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* Table 1 follows on p. 8.
** Following p. 8.

Table 1

Comparison of Total German and East German Production of Iron and Steel 1938 and 1954

	1938			1954		
	Production (Thousand Metric Tons)		East German Percent of Total	Production (Thousand Metric Tons)		East German Percent of Total
Product	Total Germany a/	East Germany b/		Total Germany c/	East Germany d/	
Pig iron	15,639	232	1.5	13,214	1,318	10.0
Crude steel	19,597	1,695	8.6	19,699	2,600	13.2
Finished steel	13,050	1,300	10.0	15,378	1,786	11.6

a. 10/
b. 11/
c. 12/
d. See Methodology, Appendix C.

A. Pig Iron and Scrap Supply.

1. Pig Iron.

Production of pig iron is dependent on imports for a large part of two of its essential raw materials, iron ore and coke. In 1954 the industry imported more than half of the iron ore (on an iron-content basis) and approximately 85 percent of the coke that it consumed. There are only three plants which produce pig iron -- J.V. Stalin at Stalinstadt (formerly Fuerstenberg), a postwar installation operating 6 conventional blast furnaces; Maxhuette at Unterwellenborn, a prewar plant with 4 conventional blast furnaces; and Calbe on the Saale River, another postwar plant operating 10 low-shaft blast furnaces.

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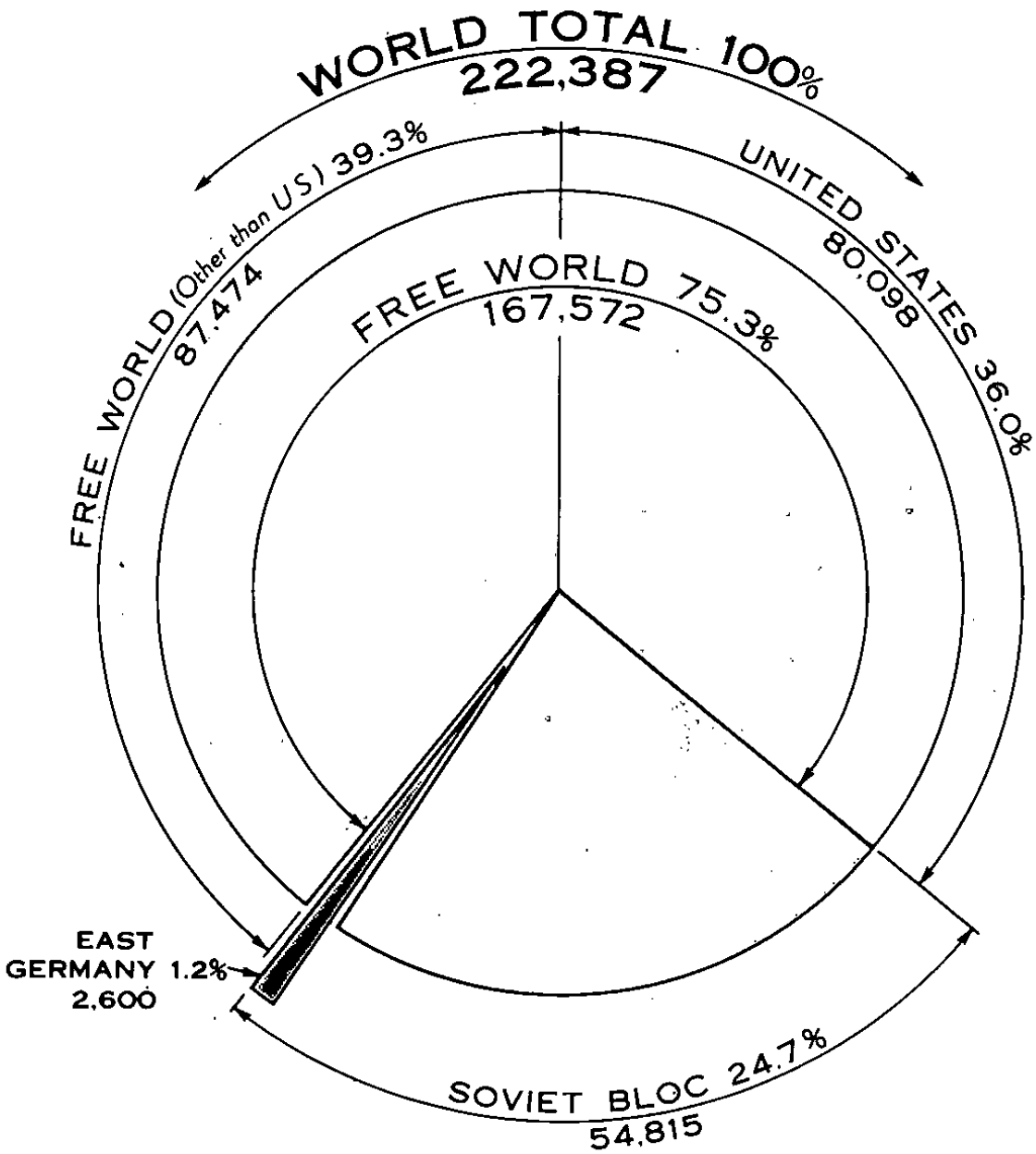
Figure 2

EAST GERMANY

COMPARISON OF WORLD PRODUCTION OF CRUDE STEEL 1954

(thousands of metric tons)



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Pig iron production goals set by the original Five Year Plan published in October 1951 have not been attained in any year. Production in 1954 was nearly 400,000 tons short of meeting the reduced goal of 1.7 million tons established in 1953. (See Table 4.*)

The production of pig iron in East Germany, by producing plant, in 1954 is shown in Table 2.

Table 2

Production of Pig Iron in East Germany, by Producing Plant 13/
1954

Thousand Metric Tons

Plant	Type of Pig Iron				
	Thomas (Basic Bessemer) Converter	Foundry	Open-Hearth and Electric Furnace	Spiegeleisen	Total
Stalin	0	84	643	3	730
Maxhuette	323	1	42	12	378
Calbe	0	210	0	0	210
Total	323	295	685	15	1,318

Production has been supplemented by a nearly constant level of imports throughout the current Five Year Plan. The total supply of pig iron in East Germany in 1951-54 is shown in Table 3.** The production of pig iron in East Germany, 1951-54 planned and actual and 1955 planned and estimated, is shown in Table 4.***

* P. 11, below.
** Table 3 follows on p. 10.
*** Table 4 follows on p. 11.

Table 3

Total Supply of Pig Iron in East Germany a/ 1951-54

Thousand Metric Tons

	1951	1952	1953	1954
Production	340	650	1,100	1,318
Imports	308	374	303	215
Total	648	1,024	1,403	1,533

a. See Tables 4 and 23, pp. 11 and 46, respectively, below.

2. Scrap.

For several years after the end of World War II the supply of iron and steel scrap in East Germany was favorable. Because of heavy exports to the USSR and the increasing demands of expanding production of iron and steel, a scrap shortage developed at the beginning of 1952.

The supply of ferrous metallics (pig iron and scrap) available to the steel industry in 1954 was considerably under the level which would permit full utilization of steelmaking capacity.

B. Steel Ingots and Steel for Castings.

Six plants accounted for 83.6 percent of East German steel ingot production in 1954 -- Brandenburg, Groeditz, Maxhuette (Unterwellenborn), Riesa, Thale, and Wilhelm Florin (Hennigsdorf). The remaining production, 427,000 tons, came from 17 plants, most of which are captive steel foundries of manufacturing enterprises. The production of steel ingots in East Germany in 1954 is shown in Table 5.*

* Table 5 follows on p. 12.

Table 4

Production of Pig Iron in East Germany
1951-54 Planned and Actual and 1955 Planned and Estimated

Thousand Metric Tons

	1951 a/		1952 b/		1953 c/		1954 d/		1955 e/	
Type of Production	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Estimated
Open-hearth and electric furnace	25	20	390	214	475	500	739	685	N.A.	850
Thomas converter	195	227	285	284	459	330	333	323	N.A.	330
Foundry	105	70	130	141	276	225	270	295	N.A.	300
Spiegeleisen	30	23	35	11	50	45	48	15	N.A.	20
Total	355 f/	340	840 f/	650	1,260 f/	1,100	1,390 f/	1,318		1,500
Plan total	375 g/		830 g/		1,630 g/		1,850 g/		2,000 g/	
Revised plan total							1,700 h/		1,850 h/	

a. 14/
b. 15/
c. 16/
d. 17/
e. 18/
f. Plans as set from year to year.
g. East German Five Year Plan announced on 1 October 1951. 19/
h. June 1953 Plan revisions. 20/

Table 5

Production of Steel Ingots in East Germany a/
1954

Thousand Metric Tons

Plant	Production
Brandenburg	675
Groeditz	201
Maxhuette (Unterwellenborn)	317
Riesa	515
Thale	150
Wilhelm Florin (Hennigsdorf)	315
Other plants	427
Total	2,600

a. See Appendix A, Table 37, p. 75, below.

In 1954, 78.3 percent of the crude steel was produced in open-hearth furnaces, 11 percent in Thomas (basic Bessemer) converters, and 10.7 percent by electric furnace practice. Although steel production met the original Five Year Plan in the first 3 years, it failed to meet the 1954 Plan and is expected to fail to meet the 1955 Plan. The planned and actual production of steel ingots in East Germany in 1951-55 is shown in Table 6.*

During 1954 the steel industry of East Germany operated at only 79.4 percent of theoretical capacity (see Appendix A, Table 37), primarily because of a shortage of ferrous metallics. Four of ten 120-ton open-hearth furnaces at Brandenburg were shut down for at least 2 months because of a lack of scrap. A similar metallics shortage existed at the Hennigsdorf plant. 21/ Indeed, the scarcity of these supplies and the inadequacies of inventories interfered with normal operations at virtually all steelmaking installations.

* Table 6 follows on p. 13.

Table 6

Planned and Actual Production of Steel Ingots in East Germany
1951-55

Thousand Metric Tons

Year	Production by Process			Total Production		
	Open Hearth	Thomas Converter	Electric	Actual	Original Plan a/	Revised Plan b/
1951	1,230 c/	190 d/	180 c/	1,600	1,584	
1952	1,530 c/	250 d/	220 c/	2,000	1,815	
1953	1,948 c/	262 e/	240 c/	2,450	2,415	
1954 f/	2,035	287 g/	278	2,600	2,950	2,735
1955	2,125 c/	295 g/	300 c/	2,720	3,115	3,000

a. 22/
b. 23/

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d. 24/
e. 25/
f. Production figures are the result of analysis of 23 steel-producing plants. See Appendix A, Table 37, p. 75, below.
g. Estimates are based on the fact that no additional converting capacity has been planned.

Production of steel in East Germany suffers from the fact that Maxhuette is the only integrated plant -- that is, a plant which produces pig iron, steel ingots, and finished steel. All other plants must use a completely cold charge of pig iron and scrap, thereby lengthening the melting time of open-hearth heats.

The supply of steel ingots in East Germany in 1951-54 is shown in Table 7.

Table 7

Supply of Steel Ingots in East Germany a/
1951-54

Thousand Metric Tons

	1951	1952	1953	1954
Production b/	1,600	2,000	2,450	2,600
Imports	148	126	118	240 (planned)
Total	1,748	2,126	2,568	2,840

a. See Table 6, p. 13, above, and Table 24, p. 47, below.
b. Includes steel for castings.

C. Finished Steel.

Finished steel, which includes all forged steel, cast steel, and rolled steel shapes, is produced in 40 plants of the East German steel industry. Six plants account for nearly 70 percent of the production. Four of these -- Maxhuette, Riesa, Thale, and Wilhelm Florin -- are also among the 6 largest ingot producers. Two of the 6 largest finished steel producers, Hettstedt and Willi Becker (Kirchmoeser), have no steelmaking facilities. Seventeen of the 40 plants producing finished steel are foundries located in manufacturing plants. The principal producers of finished steel in East Germany in 1954 are shown in Table 8.*

* Table 8 follows on p. 15.

Table 8

Principal Producers of Finished Steel in East Germany
1954

Thousand Metric Tons

Plant	Production
Hettstedt	168
Maxhuette (Unterwellenborn)	175
Riesa	310
Thale	165
Wilhelm Florin (Hennigsdorf)	247
Willi Becker (Kirchmoeser)	160
Total production of major plants	1,225
Others	561
Grand total	1,786

It is estimated that, in addition to the foundries, steel-finishing facilities include 4 structural shape mills; 5 plate mills; 15 sheet mills (all one-stand, old style); 1 each of strip, rail, welded tube, seamless tube, and railroad wheel tire mills; 5 rod and wire mills; 10 forging installations; 6 flat cold rolling mills; and 3 cold-drawn bar mills.

Production of finished steel is hampered by the fact that 16 of the producing plants possess no steelmaking facilities and must depend on deliveries of semifinished steel from the 6 main producers of ingots.

Although present finishing facilities are adequate for the processing of the production of steel planned in the current Five Year Plan, there are deficiencies in the capacities for producing rails, structural shapes, seamless tubes, and plates. The condition of the East German railroads emphasizes the need for greater capacity for producing rails. During the first half of 1954 there were 476 serious

accidents, most of them caused by broken rails. 26/ It is reported that the railroads need 1.1 million tons of rails, although production has been considerably less than 100,000 tons per year. 27/ In 1953, shipbuilding steel requirements were fulfilled by the domestic industry by only 35 percent because of a shortage of plates and seamless tubes. 28/ The Ministry for Machine Construction was unable to fulfill its contracts, because the seamless tubes, plates, and structural shapes allocated to it could not be procured. 29/

Although production of finished steel shows a continued increase and represents a gain in 1954 of 708.7 percent over 1948, production of finished steel is still insufficient to meet the requirements of the East German manufacturing industry. Assuming that consumption of finished steel in 1954 was equal to production plus imports, the steel industry supplied approximately 70 percent of total industrial requirements. The estimated and planned production of finished steel in East Germany in 1951-55 is shown in Table 9.* A breakdown of 1954 production of finished steel by product classification and producing plant is shown in Appendix A, Table 38.** The total supply of finished steel in East Germany in 1951-54 is shown in Table 10.***

D. Alloy Steel.

The production of alloy steels in East Germany since the beginning of the Five Year Plan has been insufficient to meet rising industrial demands. Only by augmenting the limited domestic production with imported specialty steels, chiefly from the USSR, has East Germany been able to supply its manufacturers on a priority basis. During this period -- and even at present -- inventories of some types of alloy steels have been critically low, with the result that manufacturers have sought to get the materials wherever they were available. Because of incorrect use of various alloy grades, shortages of alloy steels have led to products of inferior quality. Complaints, particularly from the ball-bearing industry, indicate that steels of poor quality are common and that during 1954, supplies at some plants were insufficient to meet production quotas. 30/

* Table 9 follow on p. 17.
** P. 77, below.
*** Table 10 follows on p. 18.

Table 9

Estimated and Planned Production of Finished Steel in East Germany
1951-55

Thousand Metric Tons

Product	1951 a/	1952 a/	1953 a/	1954 b/	1955 a/
Structural shapes	52	77	94	128	135
Bars	258	383	428	468	487
Plates	150	263	319	332	345
Sheets	80	134	174	179	188
Strip	30	47	67	67	71
Rails	41	57	68	72	76
Welded tubes	16	19	26	26	27
Seamless tubes	12	13	18	25	26
Wire	45	76	110	116	122
Railroad tires	22	28	33	33	35
Forgings	52	87	90	88	92
Castings	75	143	158	151	158
Cold finished	45	76	100	101	105
Total	878	1,403	1,685	1,786	1,867
Plan c/	1,056	1,222	1,630	2,020	2,235

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b. Production estimates are derived from analysis of 40 plants producing finished steel. See Appendix A, Table 38.
c. 31/

Although quantitatively the production of alloy steel in East Germany is unadequate to meet industrial requirements, the various metallurgical plants produce a wide variety of alloys to meet most service requirements. These alloys cover the conventional aplications such as tool steels, stainless and heat-resistant steels, and ball-bearing steels similar to the type manufactured in the US.

Table 10

Total Supply of Finished Steel in East Germany a/
1951-54

Thousand Metric Tons

	1951	1952	1953	1954
Production	878	1,403	1,685	1,786
Imports	472	447	796	719 (planned)
Total	1,350	1,850	2,481	2,505

a. See Table 9, p. 17, above, and Table 24, p. 47, below.

The Doehlen Alloy Steel Works is the only East German plant engaged exclusively in the manufacture of alloy steels. Five steel plants -- Maxhuette, Wilhelm Florin, Riesa, Thale, and Groeditz -- produce some 80 percent of the annual alloy steel output, primarily in electric furnaces. In addition, two small electric furnaces are in operation at the Finow Rolling Mill and are producing tool steels. 32/ Several foundries and machine plants produce limited quantities of alloy castings, chiefly for their own consumption. As of January 1953, plans of the Ministry for Metallurgy and Ore Mining were based on a scheduled 1953 production of 106,000 tons of finished alloy steel.* 33/ Minister Selbmann stated at that time that it was too early to develop input requirements for the industry because alloy steel production was "just being started" and future alloy steel requirements were unknown. 34/ Indications are that as recently as 1953, production of alloy steel was not well organized and, significantly, that the Ministry was not in a position to state firm requirements for alloy steel. The estimated production of alloy steels in East Germany, by types, in 1953 is shown in Table 11.**

* This figure includes all types of alloy steel except transformer and dynamo sheet, welding electrodes, and manganese steel.
** Table 11 follows on p. 19.

Table 11

Estimated Production of Alloy Steels in East Germany, by Types a/ 1953

	Metric Tons
Die steels	2,000
Stainless steels	1,500 b/
Low-alloy construction steels	37,000
Alloy tool steels	6,000
High speed steels	1,300 c/
Heat resistant boiler plate, pipe, and castings	9,000
Ball-bearing steel	15,000
Turbine blade steel	900
Hot working and forging steel	4,000
Nitralloy steel	1,200
Valve steel	600
Subtotal	78,500 d/
Transformer sheet steel e/	11,000 f/
Dynamo sheet steel e/	22,500 g/
Welding electrodes e/	18,000 h/
Manganese steel e/	40,000
Total	170,000

50X1

a. Includes rolled steel and castings.

b. 35/

c. 36/

50X1

d. Estimated Plan fulfillment of 74 percent.

e. Not included in the alloy steel production schedule.

f. 37/

g. 38/

h. Including unalloyed electrodes. 39/

E. Expansion of Production Facilities.

Until mid-1953, expansion of iron and steel plants in East Germany had proceeded about as planned. With the inauguration of the "new course," plans for the construction of steel plant facilities were curtailed, and they were further reduced in 1954.

Curtailment of plans has resulted in cancellation or indefinite postponement of the construction of 2 blast furnaces and the planned Thomas converters, open-hearth and electric furnace shops, slabbing mill, plate mills, and continuous wide strip mill at the J.V. Stalin plant; 2 open-hearth furnaces and finishing mills at Brandenburg; 10 low-shaft blast furnaces at Calbe; and additional electric furnaces and steel-finishing facilities planned at various small plants.

The 1955 Plan stated that total productive capacities of the metallurgical industry are to be expanded only slightly and specialization is to be stressed. 40/ Because steelmaking facilities operated at 79.4 percent of capacity in 1954, any sensible plans for expansion would emphasize the increase of pig iron and rolled steel capacities. The critical shortage of ferrous metallics must be alleviated before all of the present steelmaking capacity can be utilized effectively.

IV. Production and Supply of Basic Raw and Alloying Materials.

A. Basic Raw Materials.

Limestone is the only steelmaking raw material in which East Germany is self-sufficient. In terms of iron content, 50 percent of the East German iron ore supply is imported, as are approximately 90 percent of the coking coal (in the form of metallurgical coke) and substantially all of the manganese and alloying materials.

1. Iron Ore.

In determining East German self-sufficiency with regard to iron ore, the iron content rather than the total tonnage of ore should be considered. In terms of iron content, East Germany was about 48 percent self-sufficient in 1953 and 1954. It is possible that in 1955 and in the following few years the degree of self-sufficiency may be maintained or even raised slightly.

Estimated iron ore reserves are about 50 million tons of 25 percent to 35 percent iron content -- 25 years' supply at the present rate of production. 41/ To increase production commensurate with the requirements of the steel industry would shorten this period to approximately 12 years and would require an unrecoverable investment in facilities for the production and treatment of ore. Failure to recognize the inadequacies, both in quantity and quality, of East German iron ore reserves resulted in the formulation of unrealistic goals for the iron mining industry in the original Five Year Plan. In consequence, difficulties in meeting the Plan were encountered as early as 1951. The total output of iron ore for that year (490,000 tons 42/) fell short of the 505,000 tons planned by the Ministry for Metallurgy and Ore Mining, which in itself was a reduction of the original Five Year Plan target of 630,000 tons. 43/ No difficulties were encountered in meeting the 1952 Plan, but in middle and late 1953 further revisions were made for that year and the remaining years as a result of cutbacks in investment funds for iron mining. Recent evidence indicates that still another Plan revision was made for 1954. The planned production of iron ore in East Germany in 1951-55 is shown in Table 12.*

From all available evidence the East German iron mining industry has met or surpassed the revised Plan production figures since 1951 and will probably fulfill the revised Plan goal for 1955. The total supply of iron ore in East Germany in 1951-54 and in the 1955 Plan is shown in Table 13.**

Iron ore is produced at several mines in East Germany,*** none of which is particularly significant from the point of view of quantity or quality. In order to meet the requirements of the domestic iron and steel industry, it is necessary to import high-grade ores in increasing quantities.

During 1953, East Germany imported an estimated 750,000 tons of iron ore valued at 20,250,000 DME. Of this total quantity, the USSR supplied 680,000 tons (principally from Krivoy Rog), Yugoslavia reportedly supplied 50,000 tons, and Sweden supplied

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* Table 12 follows on p. 22.

** Table 13 follows on p. 23.

*** See the map, East Germany: Principal Mines, Smelters, and Ferro-alloy Plants, inside back cover.

Table 12

Planned Production of Iron Ore in East Germany
1951-55

Year	Original Five Year Plan a/	Revised Plan
	Thousand Metric Tons	
1951	630	505 b/
1952	750	750 c/
1953	2,330	1,340 d/
1954	2,600	1,548 e/
1955	3,650	1,651 f/

a. 44/
b. 45/
c. 46/
d. 47/
e. 48/
f. 49/

20,000 tons. During 1954 an estimated 799,000 tons of iron ore valued at 21,573,000 DME were imported from the USSR, and minor quantities were reported to have been received from India, Sweden, and Communist China. Although iron ore is not stockpiled for strategic purposes, it is usually desirable to maintain working inventories at the steel plants to insure uninterrupted furnace operations. The inability of the East German iron and steel industry to accumulate such inventories has curtailed production of pig iron on several occasions. 50/ Irregular ore shipment from the USSR and an inadequate total supply appear to be the primary causes of this problem.

2. Manganese Ore.

Although East Germany must import all of its manganese ore requirements, no shortages have been reported since 1952. The only manganese-bearing ore mined domestically is found in combination with the iron ores at Schmalkalden, Thuringia. This ore, mined for its iron content, contains only 4 to 5 percent manganese. 51/ Planned imports of manganese ore by East Germany in 1951-55 are shown in Table 14.*

* Table 14 follows on p. 24.

Table 13

Total Supply of Iron Ore in East Germany
1951-54 and 1955 Plan

Year	Production (Thousand Metric Tons) Amount	Production (Thousand Metric Tons) Iron Content	Imports (Thousand Metric Tons) Amount	Imports (Thousand Metric Tons) Iron Content	Total Supply (Thousand Metric Tons) Amount	Total Supply (Thousand Metric Tons) Iron Content	Total Value a/ (Thousand DME)
1951	490 b/	129	142 c/	74	632	203	9,655
1952	772 d/	203	400 c/	208	1,172	411	19,939
1953	1,358 e/	363	750 c/	390	2,108	753	36,578
1954	1,470 f/	419	825 c/	429	2,295	848	41,138
1955 Plan	1,651 g/	446	850 h/	459	2,501	905	43,010

a. 52/
b. 53/
c. 54/
d. 55/
e. 56/
f. 57/
g. 58/
h. Estimate based on assumption that imports will be increased only slightly.

During 1953 and 1954, approximately three-fourths of the East German manganese imports came from the USSR. Rumania, Bulgaria, and Hungary supplied the remainder. The total amount of manganese ore contracted for during 1954 was 260,000 tons, valued at 36,750,000 DME. 59/ Although the contracted amount of ore is 40,000 tons greater than planned imports for the same year, a part may be scheduled for delivery in 1955. There is no reason to believe that these contracts are not being fulfilled.

Table 14

Planned Imports of Manganese Ore into East Germany a/
1951-55

Year	Quantity (Thousand Metric Tons)	Value (Thousand DME)
1951	42	5,922
1952	120	16,920
1953	180	25,380
1954	220	31,020
1955	250	37,250

a. 60/

The first imports of manganese ore by East Germany from non-Soviet Bloc sources will take place during 1955, when an unknown amount will be received from India as part payment for goods and services East Germany has promised that country. 61/ The amount of ore to be received is not believed to be great.

The greater part of the manganese ore imported is of low grade -- 25 to 35 percent manganese -- for use in the production of pig iron and spiegeleisen. Annual requirements of metallurgical-grade ores containing 35 to 48 percent manganese are estimated at 50,000 to 60,000 tons. Most of the metallurgical-grade ore is used for the production of ferromanganese.

Stocks of manganese are relatively large. The J.V. Stalin plant, the largest producer of pig iron and largest consumer of manganese ore in East Germany, reported manganese stocks during mid-1953 at 34,000 tons, the equivalent of 87 working days at the present rate of production. 62/

Planned imports of manganese ore from 1952 through 1954 are believed to have been in excess of iron and steelmaking requirements. Based on an analysis of supply and requirements, the accumulated surplus for the period is estimated to be 100,000 tons. These stocks are probably located in plant inventories.

3. Metallurgical Coke.

Inadequate reserves of coking coal have been the limiting factor in East German production of coke, which in 1954 amounted to only 10 percent of the supply. The total supply of metallurgical coke in East Germany in 1951-54 is shown in Table 15.

Table 15

Total Supply of Metallurgical Coke in East Germany
1951-54

Year	Production a/ (Thousand Metric Tons)	Imports (Thousand Metric Tons)	Total (Thousand Metric Tons)	Value (Thousand DME)
1951	262	1,510 b/	1,772	124,800 c/
1952	264	1,692 d/	1,956	138,780 c/
1953	265	1,610 e/	1,875	132,675 c/
1954	266	1,936 f/	2,202	157,170 c/

a. 63/
b. 64/
c. 65/
d. 66/
e. 67/
f. 68/

East German resources of hard coal are limited to deposits in the Zwickau area of Saxony, where proved reserves in 1951 amounted to approximately 23.5 million tons, about 10 percent of which is of metallurgical coking quality. 69/ It is estimated that at the present rate of production the reserves of metallurgical coking coal will be exhausted by 1960. 70/

The sole current production of coke of metallurgical grade in East Germany comes from two plants, August Bebel and Karl Marx, both located near Zwickau. Their combined capacity is 300,000 tons, and output in 1954 was 266,000 tons, 71/ as compared with the iron and steel industry's requirements of 1.95 million tons. 72/

Only 1 other of 19 coke plants in East Germany was built for the purpose of producing metallurgical coke. This plant, at Lauchhammer, erected in 1952 and 1953 to operate on local brown coal by means of a special process, has a planned annual capacity of 650,000 tons of coke. 73/ Thus far the process has failed to produce coke of a quality suitable for blast furnace use. Small quantities are still shipped to Calbe and Maxhuette, but it is reported that they are used only on an emergency basis.

There is no evidence that East Germany has been able to stockpile metallurgical coke. On the contrary, stocks maintained at consuming centers appear to be below levels indicated by prudent planning.

4. Limestone.

East Germany has sufficient limestone and dolomite reserves for its iron and steel industry, and the necessary quarries have been allocated to the metallurgical industry to take care of its needs. 74/ The estimated consumption of limestone in East Germany in 1951-54 is shown in Table 16.

Table 16

Estimated Consumption of Limestone in East Germany a/
1951-54

	Thousand Metric Tons
1951	517
1952	777
1953	1,128
1954	1,254

a. 75/

B. Alloying Materials.

1. Ferroalloy Ores, Concentrates, and Metals.

The relatively small quantities of ores, concentrates, and metals used in the production of ferroalloys and alloy steels in East Germany are imported, mostly from the USSR. Of the remainder, Albania supplies most of the chromite, and Communist China is the principal source of molybdenum, vanadium, and tungsten concentrates.

It is significant that the supply of these ores is wholly indigenous to the Sino-Soviet Bloc, even though the delivered cost might be higher than the price in the West. Diversions of those materials embargoed by COCOM have been small. Evidence indicates that there are no adequate stockpiles of any of these materials in East Germany.

a. Nickel.

In spite of extensive efforts to become self-sufficient, in 1954 East Germany had to rely on imports from the USSR for almost 95 percent of its supply. The total supply of nickel in East Germany in 1951-54 is shown in Table 17.*

Production of nickel in East Germany has been centered at the Old Blaufarbenwerk Oberschlemma near Aue, Saxony. In 1948 this plant was partially dismantled, but the facilities for smelting and refining nickel remained. 76/ At that time the nickel smelter and refinery was renamed VEB Nickelhuettenwerk (Nickel Smelter). 77/ Although the capacity of this nickel plant is estimated at 150 to 200 tons per year, it is thought that 1954 production will not exceed 100 tons. The old low-grade nickel deposits in the vicinity of Halsbruecke, near Freiberg, have been used, but it has been necessary to fortify them with nickel scrap, sludge, and nickel-bearing copper slags from Mansfeld. 78/

In October 1949, nickel deposits were discovered at Lichtenstein, near Glauchau. 79/ A smelter capable of producing 1,500 tons of nickel per year was projected at nearby St. Egidien at a cost of 15.6 million DME, including development of the mines. In

* Table 17 follows on p. 28.

October 1953, however, the State Planning Committee cancelled the project, giving the "new course" as the reason. 80/ A subsequent decision to proceed more slowly with the construction of the smelter, leaving the mines closed, confirms other evidence that the grade of the ore does not permit economic exploitation. 81/ One furnace has been completely installed, and another has been authorized. 82/

Table 17

Total Supply of Nickel in East Germany
1951-54

Year	Production (Metric Tons)	Imports (Metric Tons)	Total (Metric Tons)	Value a/ (Thousand DME)
1951	135 b/	500 c/	635	3,085
1952	135 d/	544 e/	679	3,185
1953	153 f/	988 g/	1,141	5,370
1954	100 h/	1,800 i/	1,900	8,920

a. 83/
b. 84/
c. 85/
d. 86/
e. 87/
f. 88/
g. 89/
h. 90/
i. 91/

In the meantime, the Metallhuetteninstitut in Freiberg has claimed success with experiments in obtaining nickel from poor nickel oxide ores such as those found in East Germany. 92/ Support for this claim can be derived from the East German State Planning Commission's Second Five Year Plan statement that more nickel mines are to be opened and exploited.

In 1953 it was originally planned to import 600 tons of nickel from the USSR, but the failure of East German nickel production plans made it necessary for the USSR to ship additional quantities during the last 3 months of the year. 93/ The 1954 nickel import plan called for 1,800 tons to be delivered by the USSR. Only 483 tons were imported during the first half of the year, but a reported heavy increase in imports during the latter part of 1954 indicates that the deficit may have been eliminated. 94/

East Germany maintains a small operational reserve of nickel. At the end of 1954, 72 tons -- equivalent to only 2 weeks' supply -- were to be in this reserve.

b. Cobalt.

The small available supply of cobalt in East Germany is obtained from the USSR and from the West. Approximately two-thirds of the cobalt, in metallic form, comes from the USSR, and the remainder, cobalt oxide and cobalt chemicals, is imported from the West -- principally West Germany. The total supply of cobalt in East Germany in 1951-54 is shown in Table 18.

Table 18

Total Supply of Cobalt in East Germany
1951-54

Year	Imports a/ (Metric Tons)	Value b/ (Thousand DME)
1951	52 c/	990
1952	29 d/	551
1953	66 e/	1,260
1954	70 f/	1,330

a. There is no production of cobalt in East Germany.
b. 95/
c. 96/
d. 97/
e. 98/
f. 99/

East Germany has attempted to develop the production of cobalt, and the efforts continue. The copper slags from the Mansfeld Combine at Eisleben contain cobalt, and it is believed that sporadic production of cobalt, using either these slags or imported ore, has been accomplished since World War II. 100/ There is no production at present, but a new plant at Mansfeld capable of processing cobalt bearing slags is planned for the Second Five Year Plan. This plant would require an investment of 6.5 million DME. 101/

The chronic shortage of cobalt in East Germany has precluded the accumulation of any stockpiles or inventories.

c. Chromite.

East Germany imports all of its chromite requirements from the USSR and Albania. Soviet chromite is purchased directly from the USSR under a long-term trade agreement, whereas the Albanian ore is acquired in part through other Satellites on an annual, or spot, basis. 102/ In 1953 the ratio of imports of Soviet and Albanian chromite was 1 to 3. 103/ The estimated total supply of metallurgical chromite in East Germany in 1951-54 is shown in Table 19.

Table 19

Estimated Total Supply of Metallurgical Chromite in East Germany a/
1951-54

Year	Imports b/ (Thousand Metric Tons)	Value c/ (Thousand DME)
1951	5	460
1952	18	1,666
1953	33	3,080
1954	25	2,300

a. Metallurgical chromite contains 45 percent chromic oxide (Cr_2O_3).
b. Based on requirements of chromite for production of ferrochromium (FeCr).
c. Average price paid for Albanian chromite was US $41.50 per ton. 104/

d. Tungsten.

The greater part of the tungsten requirements of East Germany must be supplied by imports of tungsten ores, concentrates, powder, and ferrotungsten.

During recent years, small quantities of tungsten ore have been mined as coproducts, along with tin ore, at Ehrenfriedersdorf and Gottesberg in the Erzgebirge range near the Czechoslovak border. 105/ The production of tungsten in East Germany in 1952-54 and in the 1955 Plan is shown in Table 20.

Table 20

Production of Tungsten in East Germany
1952-54 and 1955 Plan

Year	Ore a/ (Metric Tons)	Metal Content b/ (Metric Tons)	Value c/ (Thousand DME)
1952	124 d/	98	1,653
1953	130 e/	103	1,733
1954	141 f/	111	1,880
1955 Plan	154 g/	122	2,053

a. Production of ore is given in terms of tungsten trioxide (WO_3) content.
b. Tungsten metal is 79 percent by weight of tungsten trioxide.
c. Value per ton of tungsten trioxide in 1953 computed to be 13,300 DME. 106/
d. 107/
e. 108/
f. 109/
g. 110/

Production thus far for each of the years of the Five Year Plan has exceeded the annual Plan figure. Production provides, however, only a small part of the East German requirements. Limited tungsten reserves prohibit any significant expansion of production in future years.

Imports of tungsten ores and concentrates come primarily from Communist China. In 1952, imports of Chinese tungsten ore amounted to 1,800 tons, 111/ and imports of the same amounts were planned for 1953. Shipments of tungsten concentrates have also been received from the USSR, but these may also have been of Chinese Communist origin.

As of 1 January 1953, the state metal reserves reportedly contained 558 tons of tungsten concentrates and only 0.8 ton of tungsten metal. 112/

e. Molybdenum.

Until 1951 the small amount of molybdenite concentrates used for producing ferromolybdenum at the Electrochemical Combine, Bitterfeld, was probably imported from Norway. 113/ In 1952, Chinese Communist molybdenite became available to East Germany, and, on the strength of this new internal Sino-Soviet Bloc supply, plans were made to increase the production of ferromolybdenum at Bitterfeld. 114/ 50X1
During the first half of 1954 it was planned to import 150 tons of molybdenite concentrate from Communist China. 115/ [redacted] shipments indicate that the plan is being implemented. 50X1

f. Vanadium.

Production of vanadium pentoxide (V_2O_5) was begun in 1948 at the Mansfeld Combine, Eisleben, using vanadium recovered as a byproduct of copper production. 116/ The vanadium pentoxide is shipped to Bitterfeld, where it is converted into ferrovanadium. In 1952 the Mansfeld supply of vanadium pentoxide became insufficient to support East German requirements, and vanadium concentrate was imported from Communist China to supplement this supply. 117/

g. Titanium.

Ilmenite ore used for the production of ferrotitanium has in the past been obtained in the USSR, from the Urals, and from the Kola Peninsula. 118/ During 1955, however, the Finnish state-owned mining company, Otanmaki Oy, expects to ship 12,000 tons of ilmenite to East Germany. 119/ Some of the ilmenite is undoubtedly used for producing pigments and for titanium metal experiments as well as for producing ferrotitanium.

2. Ferroalloys.

East Germany now has production facilities adequate to supply all of its needs for ferrosilicon, ferromanganese, and ferrochromium. Production facilities for ferrotungsten, ferromolybdenum, ferrovanadium, and ferrotitanium are adequate for 60 to 80 percent of requirements. Because the required tonnages of these ferroalloys are small, only minor capital outlays would be necessary to provide complete self-sufficiency in plant capacity.

The major weakness of the ferroalloy industry in East Germany lies in its nearly complete reliance on imports for ores from which ferroalloys are manufactured. Another weakness, from the point of view of vulnerabilities, is the concentration of production in 4 plants, 1 of which, the Lippendorf plant, supplies all of the ferromanganese, almost all of the ferrochromium, and about 65 percent of the ferrosilicon produced in East Germany. The production of other ferroalloys is concentrated in the Bitterfeld combine.

The East German ferroalloy industry contributes little to the economy of the Sino-Soviet Bloc as a whole. Exports to other Bloc countries are small and sporadic. Those ferroalloys produced in surplus are now in generally good supply in other Bloc countries.*

Four plants in East Germany produce ferroalloys: the Lippendorf Ferroalloy Plant, the Mueckenberg Ferroalloy Plant, the Spremberg Ferroalloy Plant, and the Bitterfeld Electrochemical Combine. All four of these were built before World War II. In 1945 they were confiscated by the USSR. The Lippendorf and Spremberg plants were designated VEB's (People-Owned Enterprises), and the Bitterfeld combine as an SAG. The USSR completely dismantled the Mueckenberg plant.

The Lippendorf, Spremberg, and Bitterfeld plants all suffered moderate war damage but were completely rehabilitated by 1951. The Lippendorf plant was rebuilt along prewar lines with added capacity for the production of ferrochromium, ferromanganese, and ferrosilicon. The three furnaces of the Spremberg plant were refitted and were utilized for the production of calcium carbide until 1951, when they were partially converted to ferrosilicon and

* See Table 21, p. 36, below.

silicocalcium. Between 1945 and 1951 the Bitterfeld plant produced small amounts of ferromolybdenum, ferrochromium, and ferrotitanium.

The Five Year Plan of 1951-55 called for increased capacity for the production of ferroalloys -- especially ferrochromium, necessary for the production of stainless steel and other alloy steels. To meet the anticipated increase in ferroalloy requirements, the East German planning authorities decided to rebuild the Mueckenberg Ferroalloy Plant. This plant was to concentrate on the production of ferrosilicon, thus freeing capacity at the Lippendorf plant -- which had been utilized for ferrosilicon production -- for the production of ferrochromium and ferromanganese. 120/ The original plans for the reconstruction of the Mueckenberg plant called for the installation of eight electric furnaces by the end of 1954. Four of these were to have 7,500-kilovolt-ampere (kva) capacity and 4 to have 3,000-kva capacity. The total investment planned was 19,345,700 DME. 121/

Investment plans for the East German ferroalloy industry, and the iron and steel industry as a whole, have been scaled down considerably from the original projections of the 1951-55 Five Year Plan. The original plans for the Mueckenberg plant, consequently, have not been realized. Of the 8 furnaces scheduled to be installed by the end of 1954, only 3 or 4 appear to be in operation. This represents only 55 to 70 percent of the capacity originally planned.

Although details of present investment plans are not available, certain developments pertaining to the expansion of the production of ferroalloys are worth noting. In 1951 and 1952, facilities were established at the Bitterfeld combine for the production of ferrotungsten and ferrovanadium, and the facilities for the production of ferromolybdenum and ferrotitanium were expanded. 122/ Before 1952, East Germany had been almost wholly dependent on imports of the ferroalloys necessary for the production of many grades of high-alloy steels. Domestic production is now sufficient to meet 60 to 80 percent of requirements. Plans for the further expansion of production facilities for ferrotungsten, ferromolybdenum, ferrovanadium, and ferrotitanium at the Bitterfeld plant were apparently curtailed in 1953 because of the generally favorable supply situation -- arising in part from the reduction in the alloy steel production program. 123/

As a result of inadequate information regarding ferroalloy requirements and poor coordination between production and foreign trade programs, a general surplus of ferrosilicon, ferromanganese, and ferrochromium developed in 1953. There were export markets for only a portion of this surplus. The 1954 production plan, consequently, was cut considerably below the 1953 level. Ferromanganese imports have probably ceased.

The inventory position of other ferroalloys such as ferrotungsten, ferromolybdenum, ferrovanadium, and ferrotitanium is not clear. Until 1952 these items were in very short supply and during that period were an important factor in limiting East German production of certain grades of alloy steel. Although the supplies of these alloys improved appreciably during the 1952-54 period, East Germany is still dependent on imports for a significant percentage of its supply, and no surpluses are known to have arisen. It thus seems probable that inventories of those alloys will remain small, not exceeding normal working levels.

The East German ferroalloy industry appears to have sufficient capacity to meet its basic domestic needs for the present and for the immediate future. Further expansion of the Bitterfeld combine will be warranted only if increased supplies of the scarcer alloying materials become available. The total supply of ferroalloys in East Germany in 1951-54 is shown in Table 21.*

V. Foreign Trade.

The foreign trade of the East German iron and steel industry consists almost wholly of imports. The industry commands no exportable surplus of any of its products (with the occasional exception of ferromanganese produced from imported ores), and the minor and irregular exports reported are not indicative of a firm pattern.

This section of the report deals with foreign trade in coke, pig iron, steel ingots, and finished steel. Imports of raw and alloying materials and ferroalloys are discussed in the sections covering the supply of those commodities.

* Table 21 follows on p. 36.

Table 21

Total Supply of Ferroalloys in East Germany
1951-54

Ferroalloy	Production (Metric Tons)	Imports (Metric Tons)	Total (Metric Tons)	Value a/* (Thousand DME)
Ferrosilicon				
1951	27,074 b/	1,000 c/	28,074	8,423
1952	42,208 d/	0	42,208	12,662
1953 e/	40,003 f/	0	40,003	12,000
1954 e/	29,691 g/	0	29,691	8,907
Ferromanganese				
1951	7,822 b/	5,000 c/	12,822	11,706
1952	16,861 d/	5,802 h/	22,663	20,691
1953 e/	17,678 f/	7,400 i/	25,078	22,896
1954 e/	13,120 g/	0	13,120	11,978
Ferrochromium				
1951	1,821 b/	200 c/	2,021	6,552
1952	7,072 d/	175 h/	7,247	23,494
1953 e/	13,311 f/	0	13,311	43,154
1954 e/	9,875 g/	0	9,875	32,027

* Footnotes for Table 21 follow on p. 38.

Table 21

Total Supply of Ferroalloys in East Germany
1951-54
(Continued)

Ferroalloy	Production (Metric Tons)	Imports (Metric Tons)	Total (Metric Tons)	Value a/ (Thousand DME)
Ferrotungsten				
1951	0	15 c/	15	414
1952	161 j/	44 h/	205	5,652
1953	300 k/	150 l/	450	12,408
1954	200 m/	0	200	5,514
Ferrovanadium				
1951	7 n/	20 c/	27	835
1952	30 j/	40 o/	70	2,054
1953	29 k/	150 l/	179	6,449
1954	40 m/	91 p/	131	4,720
Ferrotitanium				
1951	0	8 c/	8	19
1952	50 j/	20 h/	70	164
1953	105 k/	28 l/	133	312
1954	150 m/	18 g/	168	394

Table 21

Total Supply of Ferroalloys in East Germany
1951-54
(Continued)

Ferroalloy	Production (Metric Tons)	Imports (Metric Tons)	Total (Metric Tons)	Value a/ (Thousand DME)
Ferromolybdenum				
1951	N.A.	20 r/	20	206
1952	59 j/	28 h/	87	894
1953	91 k/	130 l/	221	2,271
1954	200 m/	65 p/	265	2,723

a. 124/
b. 125/
c. 126/
d. 127/
e. Production of individual products is based on the ratio to total production given in the 1953 Plan.
f. 128/
g. 129/
h. 130/
i. 131/
j. 132/
k. 133/
l. 134/
m. 135/
n. 136/
o. 137/
p. 138/
q. 139/
r. 140/

A. Organization.

Foreign trade in ferrous and related items is the responsibility of DIA-Metall (German Domestic and Foreign Trade in Metals), one of the several DIA's established for various categories 1 September 1951. 141/ This "people-owned" trading organ carries on trade under instructions from the Main Department for Import of the Ministry for Foreign and Domestic Trade. The chief function of DIA-Metall in the ferrous metals field is to furnish the iron and steel industry with needed imports of finished iron and steel. Until September 1953 the organization also handled black-market operations for metal imports from the West. Several independent firms in East Germany now carry on such illegal transactions. 142/

B. Imports.

The place of imports of coke, pig iron, and crude and finished steel in the over-all import trade of East Germany cannot be stated precisely, because of the lack of reliable value figures. In 1950, the latest year for which sufficient statistics are available to form the basis for such a comparison, imports of these items were a significant portion of total import trade, accounting for one-quarter to one-third of all imports by value. There is good reason to believe that this relative position has subsequently declined, assuming relatively constant prices for group items, as by 1952 the total value of all East German imports had almost doubled, 143/ whereas imports of coke, pig iron, and steel had increased at a lower rate.

Geographically the preponderance of East German import trade in ferrous commodities is with other Soviet Bloc countries. On the basis of value figures computed for 1950, over 80 percent of ferrous group imports were from within the Bloc. Import patterns of individual ferrous items consistently show such dominance in quantity terms. The relative percentage of import quantities within the Bloc will be discussed later in connection with the individual items.

Finished steel is by far the dominant category, accounting in 1950 for over three-fifths of the total value of the group. Imports of coke constituted one-fifth of the total, and crude steel and pig iron each amounted to somewhat less than one-tenth. If the relative changes in import quantities of the various categories between 1950 and 1953 are applied to the 1950 value figures (this assumes no change

in relative prices within the ferrous group), the proportions remain virtually constant. It appears, therefore, that the proportions are valid for the entire period of the early 1950's.

1. Metallurgical Coke.

Imports of metallurgical coke show a marked rise from 1948 to 1954, increasing over fivefold during the period.* To overcome the deficit caused by the failure of Lauchhammer to produce a useful blast furnace product, imports of coke will continue at a high level into 1955.

East Germany is supplied with metallurgical coke mainly from within the Soviet Bloc; until 1954, imports from the West were minor and sporadic. Poland is still the principal source, even though its relative contribution has declined somewhat. In 1948, Poland supplied 80 percent of the total metallurgical coke imports and in 1954 only 58 percent. Czechoslovakia has provided from one-fifth to over two-fifths of the total, supplying 32 percent in 1954. The USSR, which exported a negligible amount of coke to East Germany in 1948, by 1954 was accredited as the source of one-eighth of the total imports. There are indications, however, that a large portion of the coke imports listed as coming from the USSR is actually of Polish origin.

2. Pig Iron.

Imports of pig iron during the 1948-54 period show clearly the course of events within the domestic iron and steel industry. Imports rose to a peak in 1952 -- to over 2.5 times the 1948 level -- as the production of steel increased without a corresponding increase in pig iron capacity. Although planned imports for 1954 were less than imports in 1953, indications are that actual imports have been maintained at the previous level, reflecting the failure to meet domestic production plans.**

The USSR has consistently been the major supplier of pig iron, providing 70 percent of total East German imports of pig iron in the 1948-52 period, and Poland has supplied smaller quantities. Soviet Bloc sources, then, have been the source of at least 70 percent of total imports of pig iron in that period. Sweden has been the

* See Table 22, p. 44, below.
** See Table 23, p. 46, below.

major source among Western nations, with small amounts coming from West Germany, Austria, and Switzerland in various years during the period.

3. Crude Steel.

Imports of crude, or ingot, steel increased suddenly from a nominal level of 10,000 tons in 1949 to over 150,000 tons in 1950 and declined consistently thereafter to a 1953 level about 20 percent lower than in 1950. Planned imports for 1954 represented a new peak of 240,000 tons.

Such imports are minor in quantitative terms -- the 1950 level was equivalent to 15 percent of East German domestic steel production, and in subsequent years, including the planned peak in 1954, imports were less than 10 percent of production. Imports of crude steel are, nevertheless, significant in that a large portion consists of ingots produced in electric furnaces -- all probably alloy or special-quality steels. In 1953, imports of such electric-furnace steel amounted to 81,300 tons, and planned 1954 imports were for 165,000 tons. In both years this constituted 69 percent of total imports of ingot steel.* 144/

Imports of ingot steel are obtained from only a few countries. During the 1950-53 period the USSR accounted for slightly more than one-half of the total; almost all the remainder came from Sweden. The relatively large contribution from the latter country in all years is further evidence that ingot imports probably include a high proportion of quality steel, a specialty of Sweden.

4. Finished Steel and Finished Alloy Steel.

East German imports of finished steel fluctuated rather widely during the 1948-53 period. The 1950 level of 658,000 tons was more than twice that of 1948 and 1949. In the following 2 years, imports were 30 percent lower than the 1950 peak, but imports in 1953 rose by 73 percent to a new high of almost 800,000 tons. Although import plans for 1954 called for a decline of 10 percent from the previous year, actual imports appear to be considerably in excess of the plan. It is probable that the low import level of 1951-52 reflects

* See Table 24, p. 47, below.

the restoration of rolling mill capacity in East Germany and the consequent lessened need for imports of rolled products. The continued increase in imports since then reflects the continuing failure of the domestic industry to meet the requirements of its manufacturing consumers.*

Imports of finished steel originate in a larger number of countries than do imports of any other import categories in the ferrous group. The USSR, however, is the dominant supplier, supplying an average of more than 60 percent of all imports of finished steel since 1950. Poland and Czechoslovakia are the other Soviet Bloc sources, each accounting for about 10 percent of the annual total finished steel imports of East Germany. Thus Bloc sources together have furnished 80 percent of the imports of finished steel during the years since 1950.

Sweden and West Germany have been the principal non-Soviet Bloc sources of finished steel, the former supplying about 10 percent of total average imports, and the latter slightly less. Other countries have supplied finished steel sporadically and in relatively small proportions. Imports from all Western countries have fluctuated greatly from year to year.

A product breakdown of the finished steel category is available for 2 years -- actual imports in 1953 and planned for 1954.** The high proportion of plates among all products reflects the inability of East Germany to supply domestic needs arising from the high level of railroad rolling stock production. In addition, the heavy plate requirements of the shipbuilding industry must be satisfied entirely through imports.

Siemens-Martin (open-hearth) steel has constituted 90 percent of imports of finished steel, but, [redacted] 50X1
[redacted] Thomas (basic Bessemer converter) steel has been found 50X1
satisfactory for many of the manufacturing processes for which East Germany imports steel. As Thomas steel is 20 to 40 DME cheaper per ton, its use wherever possible should save considerable foreign exchange. 145/

* See Table 24, p. 47, below.
** See Tables 25 and 26, pp. 50 and 51, respectively, below.

In addition to imports of alloy steel in ingot form,* East Germany annually obtains from 10 to 15 percent of its supply of finished alloy steel from foreign sources. The USSR furnished an estimated 55 to 65 percent of this total in 1954. Czechoslovakia, West Germany, Austria, and Sweden supplied the remainder.

The USSR provides most of the alloy construction steel imported by East Germany, and a variety of other alloys for specialized applications. Indefinite East German import requirements and specifications which hampered imports from Czechoslovakia in 1952 appear to have been overcome; known imports of Czechoslovak alloy steel in 1954 totaled over 3,000 tons. 146/

The total of reported imports of alloy steel from West Germany and Austria in 1954 amounted to approximately 3,800 tons. 147/ Imports from Sweden, which furnished East Germany with only about 400 tons of specialty steels in 1951, appear to have declined in 1954. 148/

5. Summary.

A statistical summary of the imports of the East German iron and steel industry is presented in Tables 22 to 27,** which follow.***

* See Table 27, p. 52, below.
** Tables 22 to 27 follow on pp. 44, 46, 47, 50, 51, and 52, respectively.
*** Continued on p. 53.

Table 22

Estimated Imports of Metallurgical Coke into East Germany
1948-54

Source	1948 Amount a/ (Metric Tons)	1948 Value (Thousand DME)	1949 Amount b/ (Metric Tons)	1949 Value (Thousand DME)	1950 Amount (Metric Tons)	1951 Amount (Metric Tons)	1952 Amount (Metric Tons)	1953 Amount (Metric Tons)	1954 Amount (Metric Tons)
Poland	297,290	16,064.7	724,899	32,429	856,800 b/	836,000 c/	785,000 d/	552,000 e/	1,123,000 f/
Czechoslovakia	73,690	4,274.3	404,380	25,044	564,000 b/	417,000 g/	700,000 h/	733,000 i/	612,000 j/
USSR	153	4.3	102,206	4,902	298,800 b/	252,000 k/	207,000 k/	325,000 k/	250,000 l/
West					46,000 m/	5,000 n/			201,000 o/
Total p/	371,000	20,343.3	1,231,000	62,375	1,766,000	1,510,000	1,692,000 q/	1,610,000 q/	1,936,000

a. 149/
b. Import figures for 1949 are those reported. 150/ Figures for 1950 are estimated from 8-month totals. It is probable that Soviet deliveries are almost entirely Polish in origin and are delivered on the Soviet account. Another document puts the Polish total for 1950 at 1,074,000 tons, which is almost the sum of Polish and Soviet totals.
c. 151/
d. The estimate is based on the delivery of 588,000 tons by 30 September, giving an average of slightly over 65,000 tons per month; the estimate is rounded. 152/
e. The estimate is based on reported rail shipments of 26,599 carloads of coke through the Horka border station for the entire year minus the period from 1 November to 20 November. On the basis of the daily average, 1,000 carloads were added for the missing 20-day period. Tonnage was estimated at 20 tons per carload. The estimate for the year may be low, [redacted] the actual total may be 300,000 tons higher (see Methodology, Appendix C). 50X1
f. The estimate is based on reported rail traffic through two border stations, Horka and Forst -- [redacted] 50X1
[redacted] Forst border station was reported partially during February, March, April, June, and July, and completely for September. Actual shipments of 16,703 cars carrying 326,186 tons of coke were reported for an actual time period of less than 5 months. For an estimate of the Forst total, the actual figure was taken as a half-year figure, was doubled, and the result was added to the Horka figure (see Methodology, Appendix C). 50X1
g. 153/
[redacted] 50X1
i. The estimate is based on reported rail shipments of 10,213 carloads of coke through Bad Schandau from 1 March to 31 December plus an estimate of 3,000 carloads per month for January and February (see Methodology, Appendix C).
j. The estimate is based on reported rail shipments of 10,213 carloads of coke through Bad Schandau during the months of January and February and during the period from 21 May to 10 July; [redacted] The time periods reported, [redacted] show a monthly average of 2,550 carloads and a year estimate of 30,600 carloads (see Methodology, Appendix C). 50X1

Table 22

Estimated Imports of Metallurgical Coke into East Germany
1948-54
(Continued)

k. Plan figures. 155/ It is probable that more than 75 percent of the shipments of coke credited to the USSR are of Polish origin; the USSR agrees to deliver coke to East Germany and contracts for Polish coke to fill the commitment.
l. This is a Plan figure and is not included in the total; it is probable that planned imports from Poland include tonnages on the Soviet account. 156/
m. 157/
n. 158/
o. From West Germany; total of first, second, and third quarters. 159/
p. Tonnage figures are rounded.
q. Total includes Plan figures for Soviet deliveries.

Table 23

Imports of Pig Iron into East Germany
1948-54

Source	1948 Amount (Metric Tons)	1948 Value (Thousand DME)	1949 Amount (Metric Tons)	1949 Value (Thousand DME)	1950 Amount (Metric Tons)	1950 Value (Thousand DME)	1951 Amount (Metric Tons)	1952 Amount (Metric Tons)	1953 Amount (Metric Tons)	1954 Amount (Metric Tons)
Poland	30,011 a/	4,276.7	30,021 b/	4,248	9,460 c/	1,375 d/	(2,523) e/ f/			
USSR	89,775 a/	12,339.8	102,324 b/	15,612	153,000 c/	35,374 d/	210,000 g/	293,000 h/	225,000 i/	215,000 j/
Total Soviet Bloc	119,786	16,616.5	132,345	19,860	162,460	36,749	212,523	(293,000)	(225,000)	
Austria					23,500 k/	3,630 l/	4,946 k/	0 l/		
Norway							1,462 m/	972 n/		
Sweden			995 b/	270	5,900 o/	1,363 d/	67,000 k/	81,000 g/	3,326 r/	
Switzerland					7,000 o/	1,046 d/	200 e/			
West Germany	18,279 s/		50,000 s/				22,053 t/			
Total West	18,279		50,995		36,400	6,039	95,661	82,000		
Total World	138,065	u/	183,340	u/	198,860	42,788	308,184	375,000	(228,000)	325,000 v/

a. 160/
b. 161/
c. 162/ Projected from 8-month totals.
d. 163/ Value derived from document giving tonnage and prices per ton of pig iron imported from the following countries: USSR, $69.43 per ton; Poland, $44; Austria, $42; Switzerland, $45.30; and Sweden, $71. Dollar values were converted into DME at the rate of 3.3 DME to US $1.
e. 164/
f. Figures in parentheses are minimum quantities.
g. 165/
h. 166/
i. 167/
j. 168/
k. 169/
l. 170/ [redacted] pig iron exported to East Germany in 1950 was valued at 22 million Austrian schillings, converted to DME through US dollar equivalents. 50X1
m. 171/ Values derived from US dollars. Converted to DME at 3.33 DME to US $1.
n. 172/
o. 173/ Projected from 7-month totals.
p. 174
q. 175/
r. 176/
s. 177/
t. 178/
u. Value totals are not given when one or more component values are not known.
v. Plan figure.

Table 24

Imports of Crude and Finished Steel into East Germany
1948-53 and 1954 Plan

	1948	1949		1950		1951	1952	1953	1954 Plan
Source	Amount (Metric Tons)	Amount (Metric Tons)	Value (Thousand DME)	Amount (Metric Tons)	Value (Thousand DME)	Amount (Metric Tons)	Amount (Metric Tons)	Amount (Metric Tons)	Amount (Metric Tons)
Crude Steel									
Czechoslovakia		766 a/*	1,362						
Poland				4,300 a/					
USSR		3,042 a/	776	86,800 b/	24,892	70,300 b/	78,300 b/	54,200 b/	
Total Soviet Bloc		(3,800) c/	2,138	(91,100) b/		(70,300) b/	(78,300) b/	(88,400) b/	
Belgium		345 a/	34						
Sweden		287 a/	434	44,200 b/		48,200 b/	21,600 b/		
West Germany							19,000 d/		
Total West		(600)	468	(44,200) b/		(48,200) b/	(40,600)	(30,000) e/	
Total World		(10,000) a/	2,606	152,300 b/		147,600 b/	126,200 b/	118,400 b/	240,000 f/
Finished Steel									
Czechoslovakia	26,408 g/	127 a/	238	43,800 b/		34,300 b/	30,200 b/	62,800 b/	
Poland	3,500 g/	16,996 a/	6,713	57,500 b/	31,244	48,800 b/	52,700 b/	64,700 b/	
USSR	87,584 g/	252,381 a/	110,955	413,200 a/	248,796	281,400 b/	286,600 b/	448,600 b/	413,001 b/
Total Soviet Bloc	117,492	269,504	117,906	514,500	1/	364,500 b/	369,500	576,100	

* Footnotes for Table 24 follow on p. 48.

Table 24

Imports of Crude and Finished Steel into East Germany
1948-53 and 1954 Plan
(Continued)

Source	1948 Amount (Metric Tons)	1949 Amount (Metric Tons)	1949 Value (Thousand DME)	1950 Amount (Metric Tons)	1950 Value (Thousand DME)	1951 Amount (Metric Tons)	1952 Amount (Metric Tons)	1953 Amount (Metric Tons)	1954 Plan Amount (Metric Tons)
Finished Steel (Continued)									
Austria	4,503 g/	103 a/	211	2,040 j/	5,939 j/	2,636 j/	2,636 j/	11,794 j/	
Belgium k/	47,347 g/	16,444 a/	5,427		(720) l/	4,261 m/	4,261 m/	20,477 n/	
Netherlands					660 l/	544 l/	544 l/		
Sweden				52,300 b/	68,400 b/	36,200 b/	36,200 b/	70,073 b/	
Switzerland					500 o/			1,350 p/	
UK					16,000 q/				
West Germany		6,229 r/	2,685	88,100 b/	15,000 b/	29,600 c/	29,600 c/	(6,000) s/	
Total West	(163,500)	22,776	8,323	143,440	107,220	72,680 t/	72,680 t/	(110,000)	
Total World	281,000 a/	292,280 a/	126,229	658,000	472,000	442,000	442,000	796,400 b/	719,000 u/

a. Reported totals include minor quantities imported from countries not listed. 179/ Reported totals are not necessarily the sum of components.
b. Reported totals include minor quantities imported from countries not listed. 180/ Reported totals are not necessarily the sum of components.
c. Figures in parentheses are minimum quantities.
d. 181/
e. 182/
f. 183/
g. 184/
h. 185/
i. Value totals are not given when one or more component values are not known.
j. 1953 figure estimated from 6-month total. 186/
k. Belgium-Luxembourg Economic Union.
l. 187/
m. 188/

Table 24

Imports of Crude and Finished Steel into East Germany
1948-53 and 1954 Plan
(Continued)

n. 189/
o. 190/
p. 191/
q. 192/
r. Value estimated from average cost per ton of other entries in column. 193/
s. 194/
t. 195/
u. 196/

Table 25

Estimated Imports of Finished and Semifinished Steel into East Germany
1953

Metric Tons

Type	Amount
Finished steel	
Structural shapes	177,600 a/
Bars	29,200 a/
Plates	346,300 b/
Sheets	29,000 c/
Strip	5,000 c/
Rails	43,500 d/
Pipes and tubes	62,700 b/
Rods and wire	25,000 e/
Wheels and tires	9,500 c/
Other	26,800 f/
Total	754,600
Semifinished steel	41,800 g/
Grand total	796,400

a. 197/
b. 198/
c. 199/
d. 200/
e. 201/
f. 202/
g. 203/

Table 26

Imports of Finished and Semifinished Steel into East Germany
1954 Plan and First-Quarter Receipts

Metric Tons

Type	Planned Imports	First-Quarter Receipts [a]
Finished steel		
Structural shapes	108,000 [b]	N.A.
Bars	66,000 [a]	46,900
Plates	213,000 [b]	N.A.
Sheets	61,000 [a]	40,100
Strip	6,000 [a]	3,300
Rails	52,000 [a]	29,200
Pipe and tube		
Welded	67,000 [a]	16,200
Seamless	78,000 [a]	N.A.
Rod and wire	14,000 [a]	13,600
Wheels and tires	2,000 [a]	700
Total	667,000	150,000
Semifinished steel	52,000 [b]	N.A.
Grand total	719,000	150,000

a. 204/
b. 205/

Table 27

Estimated Imports of Alloy Steel into East Germany
1951-54

Metric Tons

Type	1951	1952	1953	1954
Ball-bearing steel	1,500 a/	2,300 b/	2,000 a/	N.A.
Stainless steel	400 c/	750 b/	1,020 d/	1,360 e/
High-speed tool steel	200 f/	600 b/	750 a/	1,400 e/
Alloy tool steel	N.A.	1,800 b/	900 a/	1,430 e/
Alloy construction steel	6,600 g/	4,200 b/	4,075 h/	5,500 a/
Dynamo sheet steel	4,000 i/	98 j/	4,363 k/	N.A.
Transformer sheet steel	1,700 l/	1,393 m/	1,050 n/	2,100 a/
Special electrical sheet steel	N.A.	836 o/	1,953 p/	N.A.
Silver steel g/	50 a/	220 b/	500 r/	500 e/
Welding electrode steel g/	1,570 s/	2,400 b/	3,100 t/	N.A.
Total u/	16,020	14,597	19,711	16,690

50X1

b. Estimated on the basis of reported imports, January through September. 206/
c. 207/
d. 208/
e. Estimated on the basis of reported imports, January through November. 209/
f. 210/
g. Reported as alloyed bar steel. 211/
h. Planned imports. 212/
i. 213/
j. 214/
k. 215/
l. 216/
m. 217/
n. 218/
o. 219/
p. 220/

Table 27

Estimated Imports of Alloy Steel into East Germany
1951-54
(Continued)

q. Including carbon steel types.
r. Planned imports. 221/
s. 222/
t. Proposed schedule of imports: 2,000 tons from the USSR, 500 tons from Czechoslovakia, and 600 tons from the West. 223/
u. Tonnages of alloy steel imports are included in the yearly totals for finished steel.

C. Exports.*

Data on East German exports of items in the ferrous group are extremely scanty and indicate no pattern by either product or country of destination. The only exports in 1954 were 12,973 tons of semi-finished steel with a value of $244,000. 224/ This is, however, consistent with the deficit position of East Germany with respect to the raw materials and finished products of the iron and steel industry. The prime function of East Germany in the Soviet Bloc economic complex is as a supplier of manufactured goods. The iron and steel products required in these manufactures can be supplied only in part by the domestic iron and steel industry, which, in turn, must import a large portion of its raw material needs. It is likely that any exports by the steel industry are the result of availabilities contrived to meet special circumstances.

D. Trade Agreements.

At the beginning of 1955, East Germany had trade agreements in force with 22 countries. Of these, 9 (including 3 with Soviet Bloc countries and 6 with non-Bloc countries) are known to specify items under the categories of coke, iron, and steel. Available data on these nine agreements are presented in tabular form in this section.**

* All values in trade agreements are reported in US dollars.
** P. 54, below.

Information on the circumstances surrounding individual trade agreements is available only for that with West Germany. The 1954 import levels represent an increase of $4,286,000 on the iron and steel account and $2,095,000 on the coke account, and in the elimination of pig iron a decrease of $1,905,000 on that account. The coke increase was apparently on East German initiative and that in iron and steel, on Western initiative. 225/ The agreement also illustrates the urgency of the East German need for ferrous group imports. During 1954, West Germany cut off approval of iron and steel exports to East Germany at a figure somewhat smaller than that agreed upon. With this leverage, West Germany was able to get East Germany to agree to make contracted East German deliveries of brown coal briquettes to West Berlin despite the shortage of that item within East Germany. West Germany then raised the iron and steel account above the original level.

East German trade agreements in effect 1 February 1955 and known references to iron and steel products and raw materials are tabulated as follows:

Country	Date of Agreement	Provisions*	
Soviet Bloc countries			
Czechoslovakia	6 March 1954	Czechoslovakia to export 226/ coke and rolled steel	
Poland	28 January 1954	Poland to export coke 227/	
	20 July 1954 (supplemental)	Poland to export coke 228/	
USSR	13 February 1954	USSR to export 229/	
		Rolling mill products	500,000 tons
		Ship plates	43,000 tons
		Pipe	2,400 tons
		Coke	250,000 tons
		Pig iron	N.A.
		USSR to export additional coke 230/ (plus 13,000 tons of 1953 arrears)	100,000 tons

* Values reported in US dollars.

Country	Date of Agreement	Provisions	
Non-Soviet Bloc countries			
Austria	18 December 1953	Austria to export 231/	
		Rolled steel (rods, plates -- including stainless, forged, automatic, drawn, and welding wire)	$4,550,000
		Rolled goods	$ 850,000
		Pig iron	$ 350,000
		Total	$5,750,000
Belgium	16 April 1954 (valid 1 September 1953 to 31 December 1954 as revised)	Belgium to export 232/	
		Rolled products (ship plates, sheets, seamless tubes, structural shapes)	$ 600,000
		Casting, rails, switches, cable, and wire	$ 500,000
		Total	$1,100,000
France	9 November 1953	France to export 233/	
		Rolling mill products	$ 200,000
West Germany	18 December 1953	West Germany to export 234/	
		Iron and steel products, including cold rolled products	$25,000,000
		Coke	3,333,300
	1954 (special processing transaction)	Coke	78,000 tons
	Third quarter of 1954 (modification of original)	Iron and steel (additional)	$ 714,000

Country	Date of Agreement	Provisions
Non-Soviet Bloc countries (Continued)		
Sweden	5 December 1953	Sweden to export 235/ Iron and steel, including pig iron, electric resistance material, welding electrodes, steel wire rope, and forgings $2,222,000
Turkey	29 April 1954	East Germany to export 236/ Steel construction material $ 250,000

VI. Distribution.

A. Pig Iron.

Total pig iron available in East Germany in 1954 was 1,533,000 tons -- 1,318,000 tons of production plus 215,000 tons of imports. 237/ The estimated distribution of pig iron in East Germany, by ministry, in 1954 is shown in Table 28.

Table 28

Estimated Distribution of Pig Iron in East Germany, by Ministry
1954

Ministry	Quantity (Metric Tons)	Percent of Total
Ministry for Machine Construction	245,000	16
Ministry for Heavy Industry	1,089,000	71
Former SAG's	199,000	13
Total	1,533,000	100

Virtually all of the pig-iron-consuming plants in the Ministry for Machine Construction are under the Main Administration for Heavy Machine Building. Most important of these are the Leipzig Iron and Steel Works; the Leipzig Steel Foundry; and Bergmann-Borsig, in Berlin. 238/ Substantially all of the iron consumed by these plants is foundry pig for cupolas.

The Production Area for Metallurgy, which is subordinate to the Ministry for Heavy Industry, now includes the former SAG's. The principal consumers of pig iron in the Production Area for Metallurgy in East Germany in 1954 are shown in Table 29.

Table 29

Principal Consumers of Pig Iron in the Production Area for Metallurgy in East Germany
1954

Thousand Metric Tons

Plant	Production of Steel	Consumption of Pig Iron a/
Brandenburg	675	193
Riesa	515	147
Maxhuette	317	349 b/
Wilhelm Florin	315	90
Groeditz	201	57
Thale	163	47
Ernst Thaelmann	74	21
Doehlen	52	16
16 smaller steel producers	283	80
Iron founding industry		288 c/
Total	2,600	1,288

a. 239/ Based on pig iron constituting 26 percent of steelmaking charge (steel production plus 10 percent metal loss).
b. Maxhuette is an exception; most of the steel production is by Thomas converter with an ingot yield of 90 percent.
c. 240/ Represents a cupola charge of 63 percent pig iron to produce finished iron castings with a yield of 63 percent.

B. Steel Ingots and Semifinished Steel.

The plan for the distribution of steel ingots in East Germany in 1954 is shown in Table 30.* The plan for the distribution of semifinished steel in East Germany in 1954 is shown in Table 31.**

A study of the 1954 distribution plans shows that not only do the producing plants ship ingots and semifinished steel to those plants which have no steel production or primary rolling mills, but they also ship important tonnages of those items to each other. This results in delays to rolling schedules, costly transportation charges, and a loss of the inherent advantage of processing hot ingots, blooms, and billets. This situation should be alleviated somewhat as more finishing capacity is developed at the Brandenburg Steel Works.

C. Finished Steel.

The 1953 Plan for East Germany 241/ outlined allocation of finished steel by ministries in terms of ingot tonnage. Converting this to finished steel tonnage and adjusting to 1954 production of 1,786,000 tons, an estimate of 1954 consumption by ministry was obtained. (See Figure 3.***)

The relatively high allocation of finished steel in East Germany to the Ministry for Machine Construction as compared with prewar distribution in the same area and with US distribution reflects the emphasis placed, as in other Soviet Bloc countries, on producer rather than consumer goods. The consumption of finished steel in East Germany in 1936 and in the 1955 Plan, and in the US in 1953, is shown in Table 32.****

Finished steel consumption in 1936 in the area which is now East Germany amounted to 3,244,000 tons, 242/ 739,000 tons more than East German 1954 production and planned imports combined. In view of the emphasis on industrial expansion, and of claimed industrial output, it is probable that current requirements for finished steel are at least equal to those of the prewar era. Thus, even though the area were to realize its most optimistic plans, production of finished steel would be inadequate to meet consumption requirements.*****

* Table 30 follows on p. 59.
** Table 31 follows on p. 60.
*** Following p. 58.
**** Table 32 follows on p. 61.
***** Continued on p. 63.

Figure 3

EAST GERMANY

ALLOCATION OF FINISHED STEEL PRODUCTS BY MINISTRY 1954

(thousands of metric tons)

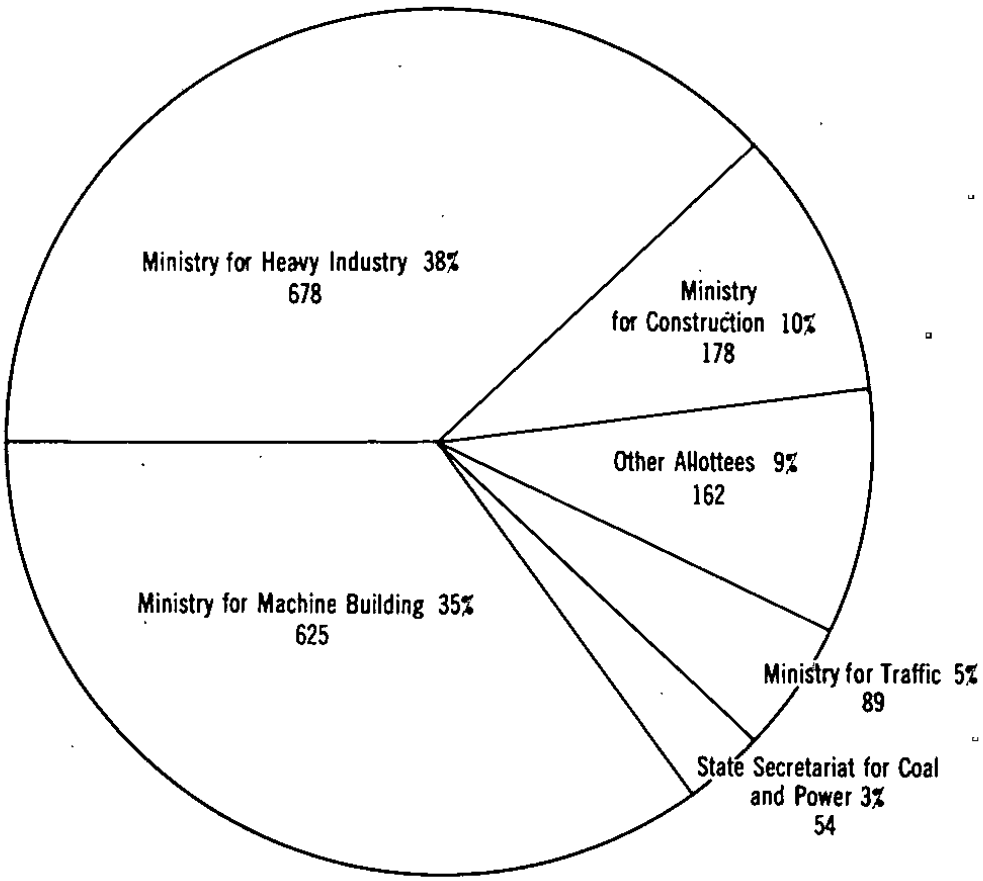

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Table 30

Estimated Plan for the Distribution of Steel Ingots in East Germany a/
1954

Thousand Metric Tons

Consumer	Producing Plants									
	Maxhuette	Riesa	Wilhelm Florin	Brandenburg	Groeditz	Doehlen	Thale	Krautheim	Silbitz	Total
Maxhuette	307			117	24					448
Riesa		520		48						568
Wilhelm Florin			290			37				327
Brandenburg				226						226
Groeditz					89					88
Doehlen						8				8
Kirchmoeser				140	6					146
Michael Niederkirchner				33	3					36
Brand-Erbisdorf					4	9				13
Wildau					17					17
Thale				78			165	10		253
Hettstedt				94	30				6	130
Ernst Thaelmann					12				6	18
Others					8	11			2	21
Total	307	520	290	736	193	65	165	10	14	2,300

a. The figures are based on the allocation plan for the first quarter of the year. 243/ The absence of an entry in any column indicates that no allocation has been reported.

Table 31

Estimated Plan for the Distribution of Semifinished Steel in East Germany a/
1954

Thousand Metric Tons

Consumer	Producing Plants						Total
	Maxhuette	Riesa	Wilhelm Florin	Brandenburg	Thale	Doehlen	
Riesa	2	b/					2
Kirchmoeser	10		9	40			59
Finow	10	6	10	30			56
Wilhelm Florin	6	11		36			53
Oberspree	1	4		12			17
Maxhuette		14		24			38
Hettstedt	73	30	2	26	2	1	134
Michael Niederkirchner		12					12
Auerhammer	19	11					30
Burg	10	4	21		7		42
Olbernhau	14	4	15		6		39
Total	145	96	57	168	15	1	482

a. The figures are based on the allocation plan for the first quarter of the year. 244/
b. The absence of an entry in any column indicates that no allocation has been reported.

Table 32

Consumption of Finished Steel in East Germany, 1936 and 1955 Plan, and in the US, 1953

East German Ministry and Consuming Category a/*	East Germany				US	
	1936 b/		1955 Plan c/		1953 d/	
	Consumption (Thousand Metric Tons)	Percent of Total	Consumption (Thousand Metric Tons)	Percent of Total	Consumption (Thousand Metric Tons)	Percent of Total
Ministry of Machine Building						
Machines, apparatus, boilers, and the like	840	26	985	37	13,251	17
Ministry of Construction						
Building construction	658	20	371	14	11,643	15
Ministry for the Metallurgical Industry						
Iron and steel construction and facilities	46	1	70	3	e/	e/
Ministry of Transportation						
Railroad locomotives and cars	689	22	281	10	2,508	3
Automotive			300	11	14,664	19
Shipbuilding			127	5	872	1
Railroad track			61	2	2,279	3
State Secretariat for Coal and Power						
Mining	41	1	66	3	324	Negligible
Electrical equipment	38	1	128	5	2,112	3
Other Consumers						
Light metalware	845	27	148	6	10,183	13 f/
Arms and ammunition			27	1	2,691	4
Other categories	78	2	65	3	17,000 g/	22
Total	3,235	100	2,629	100	77,527	100

* Footnotes for Table 32 follow on p. 62.

Table 32

Consumption of Finished Steel in East Germany, 1936 and 1955 Plan, and in the US, 1953
(Continued)

a. To show the general allocation of finished steel by general administrative area in East Germany, ministries are given as they existed in 1953.
b. The figures for 1936 represent consumption in that area which is now East Germany. 245/
c. 246/
d. 1953 is the latest year for which US consumption figures are complete. 247/
e. US statistics do not include this item. Tonnage involved probably is included under machine construction and building construction.
f. This item is comprised largely of consumer goods.
g. This item for the US includes more than 13 million tons, 17 percent of the total US consumption, for warehouses and distributors. It is believed that no comparable category exists in East Germany.

VII. Inventories and Stockpiles.

Stockpiling of ferrous metals and ores in East Germany is provided for by the establishment of the State Secretariat for Administration of State Reserves, headed by Stoph. 248/ This organization was formed from the State Administration for Material Procurement.

At least 20 depots are designated as repositories for reserves. Some of these are used to a limited extent for the storage of raw and alloying materials and finished steel products. In 1954 these stockpiles were estimated and reported to contain approximately 100,000 tons of manganese ore, 7,000 tons of ferrosilicon, 9,000 tons of ferromanganese, 5,000 tons of hot rolled sheets, 1,000 tons of steel railroad ties, 1,000 tons of pipe, and 500 sets of mounted railroad wheels. 249/ It is not known, however, to what extent these reserves are classed as strategic stockpiles, are used as operational inventories, or correspond to commercial warehousing.

Because of critical shortages reported by the consuming industries and the impracticability of stockpiling great quantities of finished steel, it is unlikely that any finished steel items are held in purely strategic stockpiles.

Nickel, cobalt, and molybdenum are in short supply, and it is very unlikely that they are being stockpiled.

Operating inventories at principal iron and steel plants as of mid-1953 were reported to be as follows: steel scrap, 56,000 tons; pig iron, 11,000 tons; metallurgical coke, 22,000 tons; and ingots, 129,000 tons. With the possible exception of that of ingots, these inventories would be considered by US standards to be critically inadequate to maintain uninterrupted production.

VIII. Manpower and Costs and Prices.

A. Manpower.

That so many production failures, high rejections, and excessive costs have been blamed on poor management and inexperience or on non-cooperative labor indicates the low level of competence of the manpower of the steel industry. 250/ The practice of choosing key personnel for political reliability rather than competence seems to be general.

Labor productivity in the East German steel industry reflects a marked contrast with that in the US industry. A comparison of 1954 East German figures with 1953 US data shows that in the East German steel industry only 36.2 tons per man were produced, compared with 155.6 tons per man in the US.

Employees engaged in the East German iron and steel industry from 1950 through 1954 are reported as follows*:

Year	Number of Employees
1950	36,700
1951	46,300
1952	51,600
1953	53,800 251/
1954	71,919 252/

B. Costs and Prices.

The East German government follows the policy of maintaining low, fixed prices for all products of the iron and steel industry. Although there is no firm basis for converting these prices in terms of DME into Western currencies, they appear to be below world levels. On the other hand, costs of production are high, resulting in the necessity for extremely high subsidies -- on the order of 50 percent of the production cost. By lowering steel prices this device serves to subsidize the East German manufacturing industries which consume steel products.

The estimated average production costs and selling prices per ton of pig iron, steel ingots, and finished steel in East Germany in 1954 are shown in Table 33.** The selling prices shown are base prices subject to the application of extras for size, quantity, quality, and the like. It is probable that the extras would not exceed 20 to 25 percent of the base.

* A detailed tabulation of the number of workers employed by the individual iron and steel plants in East Germany is given in Appendix A, Table 36, p. 74, below.

** Table 33 follows on p. 65.

Table 33

Estimated Average Production Costs and Selling Prices per Ton of Pig Iron, Steel Ingots, and Finished Steel in East Germany 1954

DME

Product	Production Cost	Selling Price a/
Pig iron	255 b/	100 c/
Steel ingots	138 d/	105 e/
Finished steel	333 f/	182 g/

a. This is base price, subject to extras, f.o.b. producing point.
b. 253/ Production cost of pig iron is a weighted average of 87 percent of 1954 East German production.
c. 254/ This is an average of a range of 95 to 104 DME.
d. 255/ Production cost of ingots is a weighted average of costs of open-hearth steel ingots produced at Hennigsdorf, Groeditz, and Riesa, representing 47.3 percent of the total 1954 production of open-hearth steel.
e. 256/
f. 257/ A weighted average based on cost of producing structural shapes, rails, bars, and rods at Hennigsdorf.
g. 258/ An average price weighted by the 1954 product mix of the entire industry.

The 1953 Plans for the Ministry for Metallurgy and Ore Mining allowed for losses of 500 million DME. After the June 1953 riot the 1953 Plan was revised to a planned loss of 550 million DME. 259/ The loss of 575 DME per ton of pig iron (as compared with a selling price of 103 DME) produced in the low-shaft furnaces at Calbe is absorbed by state subsidies. At the Wilhelm Florin Plant, Hennigsdorf, the cost per ton of open-hearth ingots is 146.12 DME, compared with a selling price of 104.8 DME. [redacted] a special committee of the Ministry for Heavy Industry investigating the high costs of production at the Hennigsdorf steel plant showed that in 1953 costs of metallurgical production amounted to 108.6 million DME and that receipts from this production were only 68.5 million DME. 260/ This represents a net loss of over 40 million DME at one of the better plants. 50X1

The East German Communist Party newspaper, Neues Deutschland, reported in September 1954 that the prices of ferrous metals were far below world levels. It further reported that the basic industries were heavily subsidized and that the Administration made no attempt to operate them economically. 261/ In fact, the 1954 planned subsidy to the metallurgical branch of heavy industry was 639 million DME, 262/ while the gross value of the industry's output is estimated at 1:3 billion DME.

IX. Technology, Quality, and Specifications.

A. Technology.

Research and technology in East Germany is controlled through the Central Office for Research and Technology (Zentralamt fuer Forschung und Technik -- ZAFT). Dr. Werner Lange, former head of the Freiberg School of Mines, has been chief of ZAFT since its organization in 1951.

ZAFT is immediately subordinate to the State Planning Commission and exercises programming and budgetary control over research and development undertaken by institutes affiliated with the nationalized plants and enterprises of East Germany -- the Academy of Sciences, the universities, the German Office for Material and Commodity Testing, and similar offices. It also screens and summarizes the results of such research.

The organizational makeup of ZAFT indicates major emphasis on the chemical and manufacturing industries. Metallurgy, both ferrous and nonferrous, including mining, is handled by one branch headed by Dr. Meissel under the direction of Alfred Baumbach.

Close supervision is exercised over ZAFT by the Soviet Control Commission at Karlshorst. The total research plan is submitted to Karlshorst for review before being passed to the State Planning Commission for approval, and copies of all progress and final reports are forwarded to the USSR.

That the emphasis in the appointment of personnel to ZAFT is on political reliability rather than professional competence is indicated by the poor quality and high cost of the iron and steel industry's output and by the underutilization of its facilities. Faced with the problem of inferior raw materials, the iron and steel

industry has undertaken some unconventional developments that might have failed with the best technological talent. Even the output at conventional installations such as Maxhuette and J.V. Stalin is low and the product substandard. On the other hand, production of ferro-alloys and of some special alloy steels appears to be in competent hands.

Judged by the standards of the US or of the major Western European producers, technological practices in the East German iron and steel industry generally are below average. Although there is considerable technical competence in the industry, it is largely frustrated by the unrealistic planning and uneconomic policies imposed by political management.

B. Quality.

The quality of pig iron suffers from the use of inferior raw materials. 263/ In 1953, only 31 percent of the pig iron produced at Calbe was classed as "high quality." 264/ Pig iron produced at this plant is used currently for iron foundry purposes only. The iron made at Maxhuette from local ores has been too low in phosphorus content to produce satisfactory Thomas steel. 265/ Although the Stalin blast furnaces operate on Krivoy Rog iron ore and Polish coke, the product is considered low grade because of excessive impurities. 266/

The influence of poor raw materials does not end with pig iron but affects the quality of finished steel products as well. There are many reports of poor quality in East German finished steel products. The quality of sheets has been criticized severely, 267/ inferior quality of steels has hindered construction of diesel engines and other heavy equipment, 268/ and 60 percent of cast steel ship propellers have been proved unsound upon X-ray examination. 269/ [redacted] rejections of railroad rails produced at Maxhuette run from 40 to 60 percent. 270/ 50X1 50X1

There are also frequent reports of poor-quality alloy steels, although in most instances it is difficult to judge whether the steel under criticism is of East German origin or is imported. Considerable research has been conducted, not only to improve the quality of alloy steel but also to develop steels employing minimum quantities of critical materials. The results of these investigations are not known.

There seems to be little doubt that the East German steel-consuming industries are harassed by poor-quality steel products. Poor quality in finished steel may result, however, more from political management and emphasis in meeting production goals (in addition to inferior raw materials) than from a lack of technological competence on the part of operating personnel.

C. Specifications.

With the intention of standardizing all steel produced in the Soviet Bloc, a decree from Moscow resulted in publication of the SES (Standard List of Iron and Steel), designed to replace the DIN (German Industrial Standards), which had been in effect since pre-World War II days. This new listing was issued by the East German Ministry for Heavy Industry on 1 December 1953 to become effective on 1 January 1954. 271/ This could present a dilemma to East German steel producers, who make steel to SES specifications while their customers remain bound by law to produce equipment made of steel in accordance with DIN standards. This difficulty is more fancied than real; the SES standards can be reconciled almost invariably to both GOST and DIN.

X. Capabilities, Vulnerabilities, and Intentions.

A. Capabilities.

The steelmaking segment of the East German iron and steel industry is capable of increasing production of steel ingots and steel for castings by nearly 30 percent by improved utilization of existing facilities. Without further expansion of present facilities, production of pig iron can be raised only slightly. The raw material base to support iron and steel production is extremely weak, however, and the lack of reserves would require increased imports of raw materials to support major expansion in production.

At the present low rate of production, coking coal will be exhausted by 1960. There are no manganese deposits within the country capable of being mined economically. Even if facilities could be provided for mining and beneficiating iron ore, total currently known reserves would be capable of supporting an annual pig iron production of 2 million tons for only 7 to 9 years. Although production of steel is not entirely dependent on scrap, the supply of scrap will play an important role in limiting production of steel in view of the relatively short supply of pig iron.

Although present facilities are capable of increasing the production of alloy steels and ferroalloys, output of these two categories of materials will be governed by the supply of alloying materials. With the exception of silicon, practically 100 percent of the alloying material supply is dependent on imports.

Currently the industry is furnishing only 70 percent of the finished steel consumption of the nation. Consumption, in turn, appears to be substantially below requirements.

In 1952 the East German State Planning Commission assessed the maximum war production potential of the steel industry in the event of mobilization for war. These plans indicated that in case of war the steelmaking pattern would be changed as follows: Thomas steel would be reduced from 18 to 11 percent of the total steel produced; open-hearth steel would increase from 78 to 83 percent; and electric-furnace steel would increase 50 percent -- to 4 to 6 percent of the total, 272/ probably indicating a shift toward a greater percentage of higher quality steel.

B. Vulnerabilities.

Economically and strategically the iron and steel industry of East Germany is potentially vulnerable from the point of view of raw material supply. Since most of the basic and alloying material comes from sources outside the country, any restriction of the flow of this supply would cripple the industry.

The steel and ferroalloy industries of East Germany contribute little to the economy of the Soviet Bloc directly. Indirectly the steel industry contributes to Bloc economy through supplying approximately 70 percent of the steel products consumed by East German manufacturing enterprises, much of whose output is exported to other Bloc countries. The economic contribution of the steel industry, however, is greatly impaired by high costs resulting in heavy subsidization.

Facilities for the production of pig iron are concentrated in three plants -- at Calbe, Stalinstadt, and Unterwellenborn -- and that concentration presents a vulnerability. Similarly, the production of ferroalloys, which are needed to make the alloy steels so vital in warfare, is concentrated at Lippendorf.

C. Intentions.

No indications of future intentions are apparent in the present or planned operations of the steel industry of East Germany. The planned slowdown in the expansion of the industry is considered to be a belated recognition of the economic facts implicit in the shortage of raw materials and in excessive costs rather than an indication of an anticipated decrease in requirements.

APPENDIX A

STATISTICAL TABLES

Table 34

Investment in the Iron and Steel Industry of East Germany a/
1948-53, 1953 Plans, 1954 Plan, and 1955 Plan

Year	Amount (Million DME)	Total as Percent of 1950
1948	176.8	48
1949	238.4	65
1950	364.6	100
1951	302.7	83
1952	338.5	93
1953 Actual	170.1	47
1953 Original Plan	316.4	87
1953 Revised Plan	183.5	50
1954 Plan	142.1	39
1955 Plan	119.0 b/	

a. 273/
b. 274/

Table 35

Planned Investment in the Iron and Steel Industry
of East Germany, by Plant a/
1954

Plant	Amount (Million DME)	Percent of 1954 Total
J.V. Stalin	31.3	22
Calbe	16.4	12
Maxhuette	8.2	6
Brandenburg	5.6	4
Riesa	6.8	5
Wilhelm Florin	4.5	3
Groeditz	23.2	16
Doehlen	10.6	7
Thale	4.2	3
Michael Niederkirchner	9.2	6
Others	22.1	16
Total	142.1	100

a. 275/

Table 36

Employment in the Iron and Steel Industry
of East Germany, by Plant a/
1954

Plant	Number of Employees
Brandenburg	4,464
Wilhelm Florin	5,672
J.V. Stalin	4,700 b/
Calbe	3,288
Maxhuette	5,857
Riesa	8,319
Groeditz	4,717
Doehlen	2,218
Michael Niederkirchner	1,492
Finow	744
Willi Becker	1,105
Burg	543
Auerhammer	660
Olbernhau	697
Oranienburg	283
Delitzsch	272
Bad Salzungen	468
Brotterode	122
Lugau	232
Leipzig Iron and Steel	4,603
Leipzig Steel Foundry	963
Frankleben	768
Thale	7,665 c/
Silbitz	2,509 c/
Krautheim	3,000 d/
Faradit	574 d/
Hettstedt	6,000 d/
Total	71,919

a. 276/
b. 277/
c. 278/
d. 279/

Table 37

Estimated Annual Capacity and Production of Crude Steel in East Germany, by Plant a/
1954

Thousand Metric Tons

Plant	Type of Production						Total	
	Open-Hearth		Electric		Converter			
	Annual Capacity	Production	Annual Capacity	Production	Annual Capacity	Production	Annual Capacity	Production
Brandenburg	975	675	b/				975	675
Copitz	10	10					10	10
Dessau			5	5			5	5
Doehlen	29	25	38	32			67	57
Ernst Thaelmann	78	58	30	24			108	82
Finow			10	8			10	8
Frankleben	38	25					38	25
Groeditz	195	185	23	16			218	201
Karl Marx			26	13			26	13
Ketschendorf					2	2	2	2
Krautheim	44	36	3	3	30	8	77	47
Lauchhammer					13	5	13	5
Leipzig Iron and Steel	35	31	20	10			55	41
Leipzig Steel Foundry			22	18			22	18
Maxhuette			50	48	300	269	350	317
Olbersdorf			2	2	32	3	34	5
Otto Gruson	39	28	8	8			47	36
Rasberg	4	4	4	4			8	8
Riesa	534	492	25	23			559	515
Silbitz	74	51	11	8			85	59
Thale	146	130	20	20			166	150
Wetterzeube			6	6			6	6
Wilhelm Florin	354	385	39	30			393	315
Total	2,555	2,035	342	278	377	287	3,274	2,600

a. Capacity and production figures represent estimates based on the best available information derived from an analysis of 23 plants.
b. Absence of an entry in any column indicates no capacity or production.

Table 38

Estimated Production of Finished Steel in East Germany
by Product Classification and Producing Plant a/*
1954

Thousand Metric Tons

Plant	Type of Product													
	Structural Shapes	Bars	Plates	Sheets	Strip	Rails	Welded Tubes	Seamless Tubes	Wire Rods and Wire	Railroad Wheels and Tires	Forgings	Castings	Cold Finished	Total
Auerhammer			11	1										12
Bad Salzungen													5	5
Brandenburg	10													10
Brand-Erbisdorf											20			20
Brotterode													9	9
Burg				14									7	21
Copitz												6		6
Delitzsch													17	17
Dessau												3		3
Doehlen											5	7		12
Ernst Thaelmann											15	10		25
Faradit													11	11
Finow		42												42
Finsterwalde									29					29
Frankleben												13		13
Groeditz										33	29	14		76
Hettstedt			135	2					19				12	168
Karl Marx												10		10
Ketschendorf												1		1
Krautheim												19		19
Langenau											5			5
Lauchhammer												3		3
Leipzig Iron and Steel												17		17
Leipzig Steel Foundry												7		7
Lugau													19	19

* Footnote for Table 38 follows on p. 77.

Table 38

Estimated Production of Finished Steel in East Germany
by Product Classification and Producing Plant a/
1954
(Continued)

Thousand Metric Tons

Plant	Type of Product													
	Structural Shapes	Bars	Plates	Sheets	Strip	Rails	Welded Tubes	Seamless Tubes	Wire Rods and Wire	Railroad Wheels and Tires	Forgings	Castings	Cold Finished	Total
Maxhuette	72	33	5			65								175
Michael Niederkirchner			65											65
Olbernhau			22	14										36
Olbersdorf												3		3
Oranienburg													4	4
Otto Gruson											3	13		16
Rasberg											2	3		5
Riesa	36	155			67	1	26	25						310
Rothenburg									9					9
Silbitz											2	20		22
Thale				148									17	165
Wetterzeube											2	2		4
Wilhelm Florin	10	186				6			45					247
Willi Becker		52	94						14					160
Wismar											5			5
Total	128	468	332	179	67	72	26	25	116	33	88	151	101	1,786

a. Based on information derived from an analysis of 40 plants producing finished steel. Absence of an entry in any column indicates no production.

Table 39

Facilities for the Production of Steel
in East Germany, by Plant a/*
1954

Plant	Open-Hearth Furnaces		Electric Furnaces		Converters	
	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)
Brandenburg	10	120				
Copitz	2	5				
Dessau			1	5		
Doehlen	2	15	1	3		
			1	5		
			2	10		
Ernst Thaelmann	2	20	2	10		
	1	40	2	3		
Finow			2	5		
Frankleben	2	20				
Groeditz	1	60	1	10		
	2	40	1	5		
	3	20				
Karl Marx			5	5		
Ketschendorf					1	1
Krautheim	3	15	1	3	2	5
Lauchhammer					1	5

* Footnotes for Table 39 follow on p. 80.

Table 39

Facilities for the Production of Steel
in East Germany, by Plant a/
1954
(Continued)

Plant	Open-Hearth Furnaces		Electric Furnaces		Converters	
	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)
Leipzig Iron and Steel	3	12	1	3		
			1	5		
			1	6		
Leipzig Steel Foundry			1	3		
			1	5		
			1	8		
Maxhuette			2	25	4	20
Olbersdorf			1	1	2	5
Otto Gruson	2	20	1	3		
			1	5		
Rasberg	1	3	1	3		
Riesa	6	120	2	10		
	2	60				
	1	40				
Silbitz	3	15	1	4		
Thale	3	50	2	10		

Table 39

Facilities for the Production of Steel
in East Germany, by Plant a/
1954
(Continued)

Plant	Open-Hearth Furnaces		Electric Furnaces		Converters	
	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)	Number	Capacity of Each (Metric Tons)
Wetterzeube			2	3		
Wilhelm Florin	4	85	1	18		
	2	40	1	10		
Total Furnaces	55		40		10	

a. Absence of an entry in any column indicates no facility or no capacity.

Table 40

Facilities for the Production of Pig Iron
in East Germany, by Plant
1954

Plant	Number and Type of Blast Furnaces	Daily Individual Furnace Capacity (Metric Tons)
J.V. Stalin	6 C a/	500
Calbe	1 LS b/	35
Calbe	1 LS	45
Calbe	8 LS	55
Maxhuette	1 C	430
Maxhuette	2 C	320
Maxhuette	1 C	210

a. C -- conventional blast furnaces.
b. LS -- low-shaft blast furnaces.

Table 41

Facilities for the Production of Ferroalloys
in East Germany, by Plant
1954

Plant	Coordinates	Number, Type, and Capacity of Furnaces	Estimated Capacity	Percent of Total Capacity	Product a/
Lippendorf Ferroalloy Plant	51°10' N - 12°23' E	4 3-phase, 7,500 kva 8 3-phase, 3,000 kva 1 3-phase, 750 kva	54,750 kva	54.2	FeMn, FeSi, FeCr
Mueckenberg Ferroalloy Plant	51°28' N - 13°44' E	3 to 4 3-phase, 7,500 kva	26,250 kva	26.0	FeSi
Spremberg Ferroalloy Plant	51°32' N - 14°23' E	2 1-phase, 3,100 kva 1 3-phase, 13,100 kva	19,300 kva	19.1	FeSi, SiCa
Bitterfeld Electrochemical Combine	51°78' N - 12°18' E	2 1-phase, 350 kva b/	700 kva	0.7	FeCr, FeW, FeMo, FeTi, FeV

a. FeMn (ferromanganese), FeSi (ferrosilicon), FeCr (ferrochromium), SiCa (silicocalcium), FeW (ferrotungsten), FeMo (ferromolybdenum), FeTi (ferrotitanium), FeV (ferrovanadium).
b. Most production in this plant is believed to be by aluminothermic and silicothermic methods rather than by conventional electrothermic processes.

Table 42

Facilities for the Production of Finished Steel
in East Germany, by Plant
1954

Plant	Facilities
Auerhammer	1 560-mm 2-high plate mill
	1 650-mm 2-high plate mill
	1 630-mm 2-high plate mill
Bad Salzungen	1 cold strip mill
Brandenburg	1 1,100-mm blooming mill
	1 850-mm structural mill
Brand-Erbisdorf	Forge (including 2 400-ton presses)
Brotterode	Cold drawing facilities
Burg	3-stand 2-high hot sheet mills
	1-stand cold sheet mill
Copitz	Foundry
Delitzsch	Cold drawing facilities
Dessau	Foundry
Doehlen	Foundry
	Forge
Ernst Thaelmann	Foundry
	Forge
Faradit	Cold drawing facilities
Finow	1 520-mm 3-high bar mill
	1 320-mm 3-high bar mill
Finsterwalde	Wire drawing benches
Frankleben	Foundry
Groeditz	1 wheel and tire rolling mill
	Foundry
	Forge (including 1 6,000-ton press)
Hettstedt	1 4,000-mm 2-high plate mill
	1 1,500-mm 3-high sheet mill
	1 200-mm bar mill
Karl Marx	Foundry
Ketschendorf	Foundry
Krautheim	Foundry
Langenau	Forge

Table 42

Facilities for the Production of Finished Steel
in East Germany, by Plant
1954
(Continued)

Plant	Facilities
Lauchhammer	Foundry
Leipzig Iron and Steel	Foundry
Leipzig Steel Foundry	Foundry
Lugau	Cold drawing facilities
Maxhuette	1 1,100-mm blooming mill
	1 950-mm structural mill
	1 700-mm bar mill
	1 2,400-mm 3-high plate mill
Michael Niederkirchner	1 2,500-mm 2-high plate mill
	1 850-mm 2-high plate mill
Olbernhau	2 700-mm 2-high plate mills
	1 560-mm 2-high plate mill
Olbersdorf	Foundry
Oranienburg	Cold strip mill
Otto Gruson	Foundry
	Forge
Rasberg	Foundry
	Forge
Riesa	1 850-mm blooming mill
	1 650-mm roughing mill
	1 560-mm structural mill
	1 360-mm bar mill
	1 280-mm bar mill
	1 welded tube mill
	1 seamless tube mill
Rothenburg	Wire drawing benches
Silbitz	Foundry
	Forge
Thale	3 2-high hot sheet mills
	3 2-high cold sheet mills
Wetterzeube	Foundry
	Forge

Table 42

Facilities for the Production of Finished Steel
in East Germany, by Plant
1954
(Continued)

Plant	Facilities
Wilhelm Florin	1 750-mm blooming mill
	1 650-mm billet mill
	1 550-mm bar mill
	1 450-mm bar mill
	1 350-mm bar mill
	1 320-mm bar mill
	1 280-mm wire rod mill
Willi Becker	1 2,500-mm plate mill
	1 280-mm bar mill
Wismar	Forge

APPENDIX B

PLANT STUDIES

1. Auerhammer Rolling Mill (50°35' N - 12°42' E).

The Auerhammer Rolling Mill is located at Aue, 30 kilometers southwest of Chemnitz (now Karl Marx) near the south border of East Germany. Facilities consist of plate and sheet rolling mills as follows: one 560-millimeter (mm) 2-high mill, one 650-mm 2-high mill, and one 630-mm 2-high mill. 280/ Production in 1954 is estimated at 12,000 tons of steel plates and sheets.

2. Bad Salzungen Cold Rolling Mill (50°49' N - 10°14' E).

The Bad Salzungen Cold Rolling Mill, formerly known as Jung and Dittmar, is located at Bad Salzungen near the extreme southwest corner of East Germany. The plant does cold rolling only. Facilities are not described. Products are cold-rolled strip and sheets. 281/ Production in 1954 is estimated at 5,000 tons. 282/

3. Brandenburg Steel Works and Rolling Mill (52°25' N - 12°33' E).

The Brandenburg Steel Works and Rolling Mill is located about 50 kilometers west and slightly south of Berlin. It is the principal steel producer in East Germany, with 10 open-hearth furnaces of approximately 120-ton capacity each. The total annual ingot steel capacity is 975,000 tons. The 1954 estimated production is 675,000 tons of open-hearth steel. 283/ Rolling facilities consist of a 1,100-mm blooming mill and an 850-mm structural mill that also produces billets. Construction of a bar mill was planned but has been postponed. Production of finished steel in 1954 is estimated at 10,000 tons of structural shapes. The rest of the steel production was shipped in the form of ingots or semifinished steel to other East German plants for conversion. 284/

4. Brand-Erbisdorf Forge Plant (50°52' N - 13°20' E).

The Brand-Erbisdorf Forge Plant is located at Brand-Erbisdorf, 5 kilometers south of Freiburg in Saxony. This is a forge shop with

9 large drop hammers and two 400-ton hydraulic presses. 285/ Production in 1954 is estimated at 20,000 tons of steel forgings. 286/

5. Brotterode Cold Drawing Plant (50°50' N - 10°26' E).

The Brotterode Cold Drawing Plant is located at Brotterode in Thuringia near the southwest corner of East Germany. The plant is equipped with facilities for cold drawing steel bars and wire. Production in 1954 is estimated at 7,000 tons of cold drawn bars and 2,000 tons of wire. 287/

6. Burg Rolling Mill (52°16' N - 11°51' E).

The Burg Rolling Mill, formerly known as the Trier Rolling Mill, is located at Burg, about 20 kilometers northeast of Magdeburg. Rolling facilities consist of 3 stands of old-fashioned 2-high hot sheet mills and 1 stand (not further described) for cold rolling. 288/ Production in 1954 is estimated at 14,000 tons of hot rolled sheets and 7,000 tons of cold rolled sheets. 289/

7. Calbe Iron Works (51°54' N - 11°46' E).

The Calbe Iron Works was designated as Key Plant No. 2 in the re-established iron and steel industry in East Germany. 290/ The plant, started in 1951 at Calbe on the Saale River about 25 kilometers southeast of Magdeburg, was designed to consist of 20 low-shaft blast furnaces, but only 10 have been constructed and the balance have been postponed indefinitely. These furnaces are of a new type designed to operate with local low-grade iron ores and coke made from local brown coal by a special process in a new coke plant built at nearby Lauchhammer. 291/ The iron produced here from local iron ores is poor in quality and is consumed as foundry iron only. The 10 existing low-shaft blast furnaces have daily rated capacity as follows: 1 at 45 tons, 1 at 55 tons, and 8 at 65 tons each. 292/ The annual capacity of these 10 furnaces is rated at 210,000 tons. Production of pig iron in 1954 is estimated at 210,000 tons. 293/

8. Copitz Steel Works (50°58' N - 13°56' E)

The Copitz Steel Works, formerly known as the Ebelt and Hille Steel Foundry, is located at Pirna on the west bank of the Elbe River, some 25 kilometers southeast of Dresden. Steelmaking facilities consist of 2 open-hearth furnaces of 5-ton rated capacity each. 294/ Total

annual ingot-producing capacity is rated at 10,000 tons. Ingot production in 1954 is estimated at 10,000 tons. Finishing facilities are represented by a steel foundry. Production of finished steel castings in 1954 is estimated at 6,000 tons. 295/

9. Delitzsch Cold Drawing Plant (51°32' N - 12°21' E).

The Delitzsch Cold Drawing Plant is located at Delitzsch, some 25 kilometers north of Leipzig. The plant is equipped with facilities for cold drawing steel bars. 296/ Production in 1954 is estimated at 17,000 tons of cold drawn bars. 297/

10. Dessau Heavy Equipment Plant (51°50' N - 12°15' E).

The Dessau Heavy Equipment Plant is located in Dessau, 50 kilometers southeast of Magdeburg. Steelmaking facilities consist of 1 electric furnace of 5-ton rated capacity. 298/ Total annual steel producing capacity is rated at 5,000 tons. Ingot production in 1954 is estimated at 5,000 tons. Steel finishing facilities are represented by a steel foundry. Production of finished steel in 1954 is estimated at 3,000 tons of castings. 299/

11. Doehlen Alloy Steel Works (51°01' N - 13°40' E).

The Doehlen Alloy Steel Works is located in Doehlen, adjoining the town of Freital on the west. It is the site of a pre-World War II steel plant that was completely dismantled by the USSR and has been rebuilt since 1948. 300/ At present there are 2 open-hearth furnaces of 15-ton capacity each, and 4 electric furnaces -- 1 of 3-ton capacity, 1 of 5-ton capacity, and 2 of 10-ton capacity each. 301/ The annual rated capacity of these furnaces is 29,000 tons of open-hearth steel and 38,000 tons of electric steel; the total rated capacity is 67,000 tons. Estimated 1954 production is 25,000 tons of open-hearth steel and 32,000 tons of electric steel; the total production is 57,000 tons. 302/ Much of the ingot production is distributed to other plants for conversion. 303/ Finishing facilities consist of a forge shop and a steel foundry. 304/ Estimated 1954 production of finished steel products is 5,000 tons of forgings and 7,000 tons of steel castings; the total production is 12,000 tons. 305/ This plant is the most important producer of alloy steel in East Germany.

12. Ernst Thaelmann Works (52°10' N - 11°40' E).

The Ernst Thaelmann Works is located at Magdeburg, some 110 kilometers southwest of Berlin. This is the former Krupp-Gruson plant, devoted to the manufacture of armaments and machinery. It is the most important enterprise of this nature in East Germany. 306/ Steelmaking facilities consist of the following: one 40-ton open-hearth furnace, two 20-ton open-hearth furnaces, two 10-ton electric furnaces, and two 3-ton electric furnaces. The annual ingot capacity is 78,000 tons of open-hearth steel and 30,000 tons of electric steel. The total capacity is 108,000 tons. Production of steel in 1954 was 58,000 tons of open-hearth steel and 24,000 tons of electric steel. The plant operates a forge shop and a steel foundry. Production of finished steel in 1954 is estimated at 15,000 tons of forgings and 10,000 tons of steel castings. 307/ Total production of finished steel was 25,000 tons.

13. Faradit Cold Rolling Mill (50°50' N - 12°55' E).

The Faradit Cold Rolling Mill is located in Karl Marx (formerly Chemnitz). The plant has facilities for cold rolling steel tubes and strip. 308/ Production in 1954 is estimated at 11,000 tons of cold rolled products. 309/

14. Finow Rolling Mill (52°50' N - 13°42' E).

The Finow Rolling Mill, formerly Hoffmann and Motz, is located at Finow, some 40 kilometers northeast of Berlin. Steelmaking facilities consist of 2 electric furnaces of 5-ton capacity each. 310/ Annual steel ingot capacity is rated at 10,000 tons. Ingot production in 1954 is estimated at 8,000 tons of electric steel. Steel finishing facilities consist of one 520-mm 3-high bar mill and one 320-mm 3-high bar mill. Production of finished steel in 1954 is estimated at 42,000 tons. 311/

15. Finsterwalde Wire Works (51°38' N - 13°43' E).

The Finsterwalde Wire Works is located at Finsterwalde, about 100 kilometers northeast of Leipzig. Finishing facilities consist of wire drawing benches. Finished steel production in 1954 is estimated at 29,000 tons of steel wire. 312/

16. Frankleben Steel Works (51°19' N - 11°56' E).

The Frankleben Steel Works, formerly known as the Bruno Mueller AG, is located at Frankleben, some 25 kilometers west of Leipzig. Steelmaking facilities consist of 2 open-hearth furnaces of 20-ton capacity each. 313/ Annual steel ingot capacity is rated at 38,000 tons. Ingot production in 1954 is estimated at 25,000 tons. Steel finishing facilities are represented by a steel foundry. Production of finished steel in 1954 is estimated at 13,000 tons of steel castings. 314/

17. Groeditz Steel Works and Rolling Mill (51°25' N - 13°27' E).

The Groeditz Steel Works and Rolling Mill is located at Groeditz, about 20 kilometers northeast of Riesa in Saxony. It was dismantled by the USSR, but after 1947 it was rebuilt. At present there are steelmaking facilities as follows: 3 open-hearth furnaces of 20-ton capacity each, 2 open-hearth furnaces of 40-ton capacity each, 1 open-hearth furnace of 60-ton capacity, 1 electric furnace of 5-ton capacity, and 1 electric furnace of 10-ton capacity. 315/ Total annual steelmaking capacity is rated at 195,000 tons of open-hearth steel and 23,000 tons of electric steel, a total of 218,000 tons. Estimated 1954 ingot production is 185,000 tons of open-hearth steel and 16,000 tons of electric steel, a total of 201,000 tons. Groeditz ships a large part of its ingot production to other mills for conversion. Finishing facilities consist of a railroad wheel and tire mill, a forge shop, and a steel foundry. 316/ Production of finished steel in 1954 is estimated at 33,000 tons of railroad wheels and tires, 29,000 tons of forgings, and 14,000 tons of steel castings, a total of 76,000 tons. 317/

18. Hettstedt Rolling Mill (51°39' N - 11°30' E).

The Hettstedt Rolling Mill, also known as the Wilhelm Pieck Combine, is located at Hettstedt, about 50 kilometers south of Magdeburg. This plant rolled nonferrous metals before World War II but has been converted to produce steel primarily. Finishing facilities consist of one 4,000-mm 2-high reversing plate mill, one 1,500-mm 3-high sheet mill, and one 2-high bar mill of three 500-mm stands and six 200-mm stands. 318/ Production of finished steel in 1954 is estimated at 168,000 tons. 319/

19. Karl Marx Steel Foundry (52°10' N - 11°40' E).

The Karl Marx Steel Foundry, also known as Schaeffer and Budenberg, is located in Magdeburg. Steelmaking facilities consist of 5 electric furnaces, each of 5-ton rated capacity. 320/ Annual ingot capacity is rated at 26,000 tons, with an ingot production in 1954 of 13,000 tons. Finishing facilities are represented by a steel foundry which in 1954 produced 10,000 tons of electric steel castings. 321/

20. Ketschendorf Steel Foundry (52°21' N - 14°05' E).

The Ketschendorf Steel Foundry is located at Ketschendorf, 50 kilometers southeast of Berlin. Steelmaking facilities consist of a converter of 1-ton capacity. Steel capacity is rated at 2,000 tons of Thomas steel. Production in 1954 is estimated at 2,000 tons. Finishing facilities are represented by a steel foundry which in 1954 produced 1,000 tons of steel castings. 322/

21. Krautheim Steel Foundry (50°50' N - 12°55' E).

The Krautheim Steel Foundry, formerly known as G. Krautheim, is located at Karl Marx (formerly Chemnitz). Steelmaking facilities consist of 3 open-hearth furnaces of 15-ton capacity each, 2 basic converters of 5-ton capacity each, and 1 electric furnace of 3-ton capacity. Annual steel capacity is rated at 44,000 tons of open-hearth steel, 30,000 tons of Thomas steel, and 3,000 tons of electric steel, a total of 77,000 tons. Production in 1954 is estimated at 36,000 tons of open-hearth steel, 8,000 tons of Thomas steel, and 3,000 tons of electric steel, a total of 47,000 tons. Finishing facilities consist of a steel foundry which in 1954 produced 19,000 tons of steel castings. 323/

22. Langenau Forge Plant (50°50' N - 13°18' E).

The Langenau Forge Plant is located at Langenau, 25 kilometers east of Karl Marx (formerly Chemnitz). Steel finishing facilities consist of a forge shop which in 1954 produced 5,000 tons of forgings. 324/

23. Lauchhammer Steel Foundry (51°30' N - 13°48' E).

The Lauchhammer Steel Foundry is located at Lauchhammer, 50 kilometers north of Dresden. Steelmaking facilities consist of a basic

converter of 5-ton capacity. Annual steel capacity is rated at 13,000 tons of Thomas steel. Steel production in 1954 is estimated at 5,000 tons. The only finishing facility is a steel foundry which in 1954 produced 3,000 tons of steel castings. 325/

24. Leipzig Iron and Steel Works (51°18' N-12°20' E).

The Leipzig Iron and Steel Works, formerly known as Meier and Weichelt, is located in Leipzig. Steelmaking facilities consist of 3 open-hearth furnaces of 12-ton capacity each, 1 electric furnace of 6-ton capacity, and 2 electric furnaces of 5-ton capacity each. Annual steel capacity is rated at 35,000 tons of open-hearth steel and 20,000 tons of electric steel, a total of 55,000 tons. 326/ Production in 1954 is estimated at 31,000 tons of open-hearth steel and 10,000 tons of electric steel, a total of 41,000 tons. The only finishing facility is a steel foundry which in 1954 produced 17,000 tons of steel castings. 327/

25. Leipzig Steel Foundry (51°18' N-12°20' E).

The Leipzig Steel Foundry is located in Leipzig. Steelmaking facilities consist of 1 electric furnace of 8-ton capacity, 1 electric furnace of 5-ton capacity, and 1 electric furnace of 3-ton capacity. Annual steel capacity is rated at 22,000 tons of electric steel. Production in 1954 is estimated at 18,000 tons. The steel foundry in 1954 produced 7,000 tons of steel castings. 328/

26. Lugau Drawing Works (50°44' N-12°45' E).

The Lugau Drawing Works is a cold drawing plant located at Lugau, 15 kilometers southwest of Karl Marx (formerly Chemnitz). Production of finished steel in 1954 is estimated at 19,000 tons of cold drawn bars and tubes. 329/

27. Maxhuette Iron and Steel Works (50°40' N-11°26' E).

The Maxhuette Iron and Steel Works is located at Unterwellenborn, 5 kilometers east of Saalfeld in Thuringia. It is the only completely integrated iron and steel plant in East Germany. It escaped serious war damage and was not dismantled by the USSR. Ironmaking facilities consist of 1 blast furnace rated at 210 tons per day, 2 blast furnaces rated at 320 tons per day each, and 1 blast furnace rated at 430 tons per day. 330/ Total annual capacity of these furnaces is rated at 435,000 tons of pig iron. Production of pig iron in 1954 is estimated

at 378,000 tons. Steelmaking facilities consist of 4 basic converters of 20-ton capacity each and 2 electric furnaces of 25-ton capacity each. 331/ Total annual steelmaking capacity is rated at 300,000 tons of Thomas steel and 50,000 tons of electric steel, a total of 350,000 tons. Steel production in 1954 is estimated at 269,000 tons of Thomas steel and 48,000 tons of electric steel, a total of 317,000 tons. 332/ Rolling mills consist of one 1,100-mm blooming mill, one 950-mm structural and rail mill, one 700-mm bar and light rail mill, and one 2,400-mm 3-high plate mill. 333/ Production of finished steel in 1954 is estimated at 175,000 tons.

28. Michael Niederkirchner Rolling Mill (51°52' N - 10°41' E).

The Michael Niederkirchner Rolling Mill, also known as the Ilsenburg Rolling Mill, is located at Ilsenburg, about 65 kilometers southwest of Magdeburg and 5 kilometers from the west border of East Germany. Finishing facilities consist of one 2,500-mm 2-high reversing plate mill and one 850-mm 2-high reversing plate mill. Finished steel production in 1954 is estimated at 65,000 tons of plates.

29. Olbernhau Rolling Mill (50°40' N - 13°20' E).

The Olbernhau Rolling Mill, formerly known as the F.A. Lange Metal Works, is located at Olbernhau, in the southeast corner of East Germany about 5 kilometers from the Czechoslovak border. The plant specializes in the production of transformer and dynamo sheets. The antiquated rolling mill facilities consist of two 700-mm 2-high plate mills and one 560-mm 2-high plate mill. 334/ Production of finished steel in 1954 is estimated at 36,000 tons of plates and sheets. 335/

30. Olbersdorf Steel Foundry (50°53' N - 14°46' E).

The Olbersdorf Steel Foundry, also known as the George Schwarz Steel Works, is located at Olbersdorf, a suburb of Zittau on the southeast border of East Germany, 70 kilometers from Dresden. Steelmaking facilities consist of 2 basic converters of 5-ton capacity each and 1 electric furnace of 1-ton capacity. Annual ingot capacity is rated at 32,000 tons of Thomas steel and 2,000 tons of electric steel, a total of 34,000 tons. 336/ The steel foundry in 1954 produced 2,000 tons of Thomas steel castings and 1,000 tons of electric steel castings, a total of 3,000 tons. 337/

31. Oranienburg Cold Rolling Mill (52°45' N - 13°14' E).

The Oranienburg Cold Rolling Mill, formerly known as Heintze and Blanckertz, is located at Oranienburg, 30 kilometers northwest of Berlin. Production of finished steel in 1954 is estimated at 4,000 tons of cold rolled strip. 338/

32. Otto Gruson Machine Plant (52°10' N - 11° 40' E).

The Otto Gruson Machine Plant, also known as Georgi Dimitroff, is located in Magdeburg. Steelmaking facilities consist of 2 open-hearth furnaces of 20-ton capacity each, 1 electric furnace of 5-ton capacity, and 1 electric furnace of 3-ton capacity. 339/ Annual ingot capacity is rated at 39,000 tons of open-hearth steel and 8,000 tons of electric steel, a total of 47,000 tons. Production in 1954 is estimated at 28,000 tons of open-hearth steel and 8,000 tons of electric steel, a total of 36,000 tons. Finishing facilities are represented by a steel foundry and a forge shop, which in 1954 produced 13,000 tons of steel castings and 3,000 tons of forgings, a total of 16,000 tons. 340/

33. Rasberg Steel Foundry (51°02' N - 12°09' E).

The Rasberg Steel Foundry is located at Rasberg, near Zeitz, 40 kilometers south of Leipzig. Steelmaking facilities consist of 1 open-hearth furnace of 3-ton capacity and 1 electric furnace of 3-ton capacity. Annual steel capacity is rated at 4,000 tons of open-hearth steel and 4,000 tons of electric steel, a total of 8,000 tons. Production in 1954 is estimated to be the same as capacity. Finishing facilities consist of a steel foundry and a forge shop which in 1954 produced 3,000 tons of steel castings and 2,000 tons of forgings, a total of 5,000 tons. 341/

34. Riesa Steel Works and Rolling Mills (51°18' N - 13°18' E).

The Riesa Steel Works and Rolling Mills is located at Riesa on the west bank of the Elbe River about 40 kilometers northwest of Dresden. It is the principal producer of finished steel in East Germany. Steelmaking facilities consist of 6 open-hearth furnaces of 120-ton capacity each, 2 open-hearth furnaces of 60-ton capacity each, 1 open-hearth furnace of 40-ton capacity, 1 electric furnace of 10-ton capacity, and 1 electric furnace of 5-ton capacity. 342/ Total annual steelmaking capacity is rated at 534,000 tons of open-hearth steel and 25,000 tons of electric steel, a total of 559,000 tons. Steel ingot production

in 1954 is estimated at 492,000 tons of open-hearth steel and 23,000 tons of electric steel, a total of 515,000 tons. Finishing facilities consist of one 850-mm blooming mill, one 650-mm roughing mill, one 560-mm structural and rail mill, one 360-mm bar mill, one 280-mm bar mill, one welded tube mill, and one seamless tube mill. 343/ Production of finished steel in 1954 is estimated at 310,000 tons.

35. Rothenburg Steel Wire Mill (51°39' N - 11°45' E).

The Rothenburg Steel Wire Mill, also known as Waren and Drahtwerke, is located at Rothenburg, 50 kilometers south of Magdeburg. Production of wire in 1954 is estimated at 9,090 tons. 344/

36. Silbitz Steel Foundry (50°57' N - 12°00' E).

The Silbitz Steel Foundry, also known as the Oswald Kunsch Steel Foundry, is located at Silbitz, about 50 kilometers southwest of Leipzig. Steelmaking facilities consist of 3 open-hearth furnaces of 15-ton capacity each and 1 electric furnace of 4-ton capacity. 345/ Annual steel capacity is rated at 74,000 tons of open-hearth steel and 11,000 tons of electric steel, a total of 85,000 tons. Production in 1954 is estimated at 51,000 tons of open-hearth steel and 8,000 tons of electric steel, a total of 59,000 tons. Steel finishing facilities consist of a steel foundry and a forge shop, which in 1954 produced 22,000 tons of steel castings and forgings. 346/

37. J.V. Stalin Metallurgical Combine (52°09' N - 14°38' E).

The J.V. Stalin Metallurgical Combine was designated as Key Plant No. 1 in the broad scheme for reestablishing an iron and steel industry in East Germany after World War II. 347/ The plant originally was known as Eisenhuettenwerk Kombinat Ost, or simply as EKO. It is located at Stalinstadt (formerly Fuerstenberg) on the west bank of the Oder River, 80 kilometers east and a little south of Berlin. Original plans for this operation contemplated a completely integrated plant based on 8 blast furnaces, with appropriate steelmaking capacity and rolling mills, including a modern wide strip mill. 348/ This program, started in 1950, has progressed no further than the construction of 6 blast furnaces with essential adjuncts. Everything else has been postponed indefinitely. 349/ The location of this plant on the east boundary of East Germany was chosen in order to facilitate the use of metallurgical coke from Poland and iron ore from Krivoy Rog. The blast

furnaces have a daily rated capacity of 500 tons each and a total annual capacity of 1,020,000 tons. 350/ Production of pig iron in 1954 is estimated at 730,000 tons.

38. Thale Iron and Steel Works (51°45' N - 11°03' E).

The Thale Iron and Steel Works is located at Thale, 60 kilometers southwest of Magdeburg near the west border of East Germany. This is the oldest steel plant in East Germany. Steelmaking facilities consist of 3 open-hearth furnaces of 50-ton capacity each and 2 electric furnaces of 10-ton capacity each. Total annual steelmaking capacity is rated at 146,000 tons of open-hearth steel and 20,000 tons of electric steel, a total of 166,000 tons. Steel ingot production in 1954 is estimated at 150,000 tons. Antiquated finishing facilities consist of three 2-high hot sheet mills and two 2-high cold sheet mills. 351/ Production of sheets in 1954 is estimated at 165,000 tons.

39. Wetterzeube Steel Works (51°00' N - 12°01' E).

The Wetterzeube Steel Works, formerly known as Staeglich and Haberkorn Steel Works, is located at Wetterzeube, about 50 kilometers southwest of Leipzig. Steelmaking facilities consist of 2 electric furnaces of 3-ton capacity each. 352/ Annual steel capacity is rated at 6,000 tons. Steel finishing facilities consist of a steel foundry and a forge shop, which in 1954 produced 4,000 tons of steel castings and forgings. 353/

40. Wilhelm Florin Steel Works and Rolling Mill (52°38' N - 13°12' E).

The Wilhelm Florin Steel Works and Rolling Mill is located at Hennigsdorf, about 15 kilometers northwest of Berlin in Brandenburg Province. The plant existed for many years before World War II. It was severely damaged during the war, and the USSR demolished what was left. The rebuilding job made this plant the fourth largest steel producer in East Germany. Steel producing facilities are as follows: 4 open-hearth furnaces of 85-ton capacity each, 2 open-hearth furnaces of 40-ton capacity each, 1 electric furnace of 18-ton capacity, and 1 electric furnace of 10-ton capacity. The annual steelmaking capacity is 354,000 tons of open hearth steel and 39,000 tons of electric steel, a total of 393,000 tons. 354/ The estimated production of steel ingots and steel for castings in 1954 is 285,000 tons of open-hearth steel and 30,000 tons of electric steel, a total of 315,000 tons. 355/ Rolling mills consist of the following units:

one 750-mm blooming mill, one 650-mm billet mill, one 550-mm bar mill, one 450-mm bar mill, one 350-mm bar mill, one 320-mm bar mill, and one 280-mm wire rod mill. 356/ Finished products of this plant include bars (including flats 18 to 150 mm, rounds 18 to 100 mm, squares, and hexagons), bar-size shapes, special shapes, light rails, tie plates, fish plates, wire rods, and wire. The estimated production of finished products in 1954 is 247,000 tons. 357/

41. Willi Becker Rolling Mill (52°23' N - 12°26' E).

The Willi Becker Rolling Mill, also known as the Kirchmoeser Rolling Mill, is located at Kirchmoeser, about 60 kilometers west and a little south of Berlin. Steel finishing facilities consist of one 2,500-mm sheared plate mill and one 280-mm bar mill. 358/ Production of finished steel in 1954 is estimated at 160,000 tons of plates, bars, and wire rods. 359/

42. Wismar Forge Shop (53°54' N - 11°30' E).

The Wismar Forge Shop, also known as the Heine Fink Forge Shop, is located at Wismar on the North Sea coast. Steel finishing facilities consist of a forge shop which in 1954 produced 5,000 tons of forgings. 360/

APPENDIX C

METHODOLOGY

Where feasible, methodology has been shown in the text and in the tables. Some general applications of methods are discussed here.

1. Pig Iron and Steel Production Estimates.

The 1951-55 annual production figures contained in this report, with the exception of pig iron for 1954, are those which were coordinated and agreed upon by the EIC Subcommittee on Metals and Minerals. In each case the estimate represents a compromise between AFOIN and CIA. In most cases the CIA estimates were higher than those contained in this report.

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2. Values.

Selected values for basic raw and alloying materials were applied to all years, disregarding annual changes in the value of DME and in the value of commodities.

3. Requirements and Consumption.

Where requirements or consumption of raw or alloying materials are given, the figures are based on data which cover only a segment of the industry, applied on a per-ton basis to the production of the whole industry.

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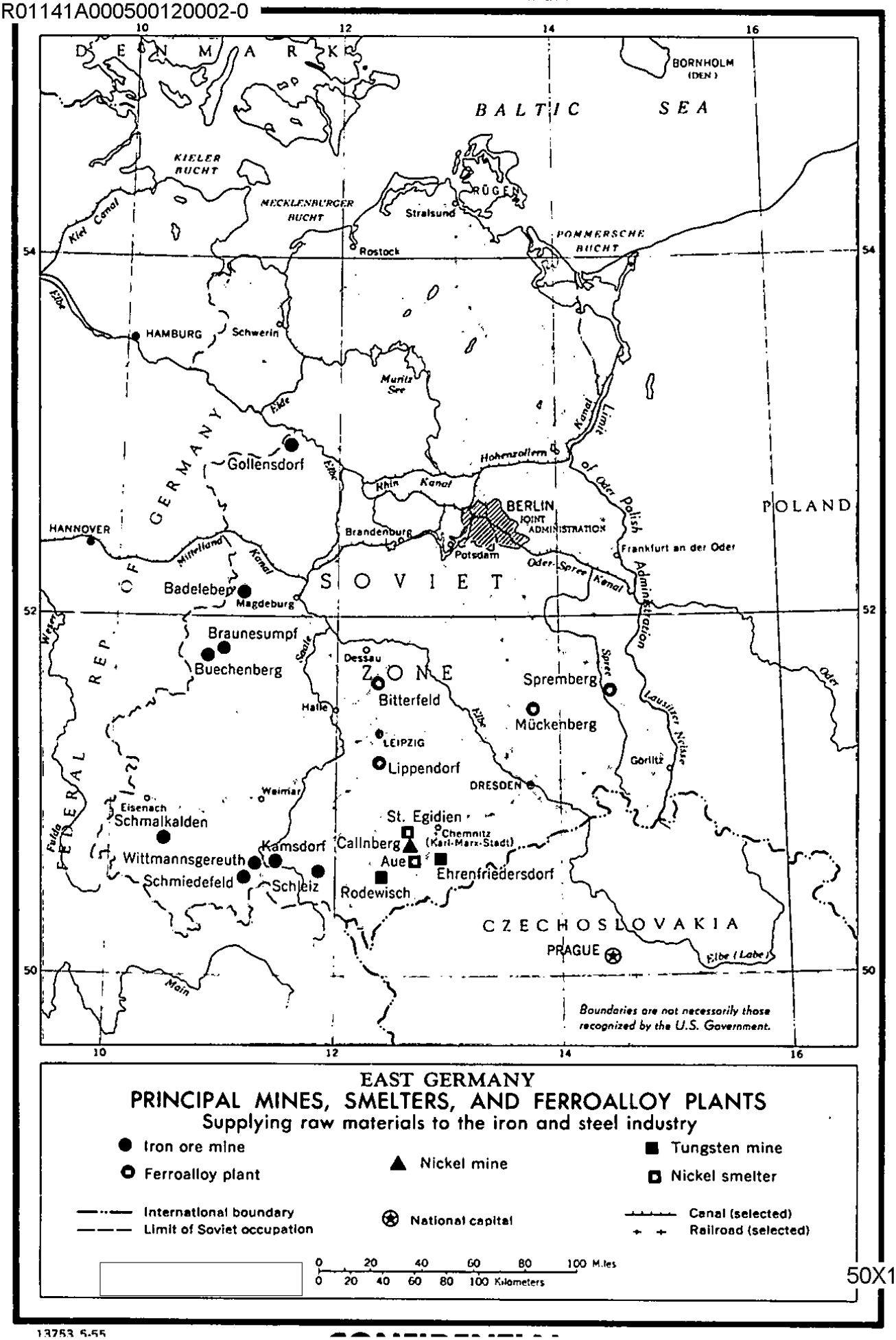

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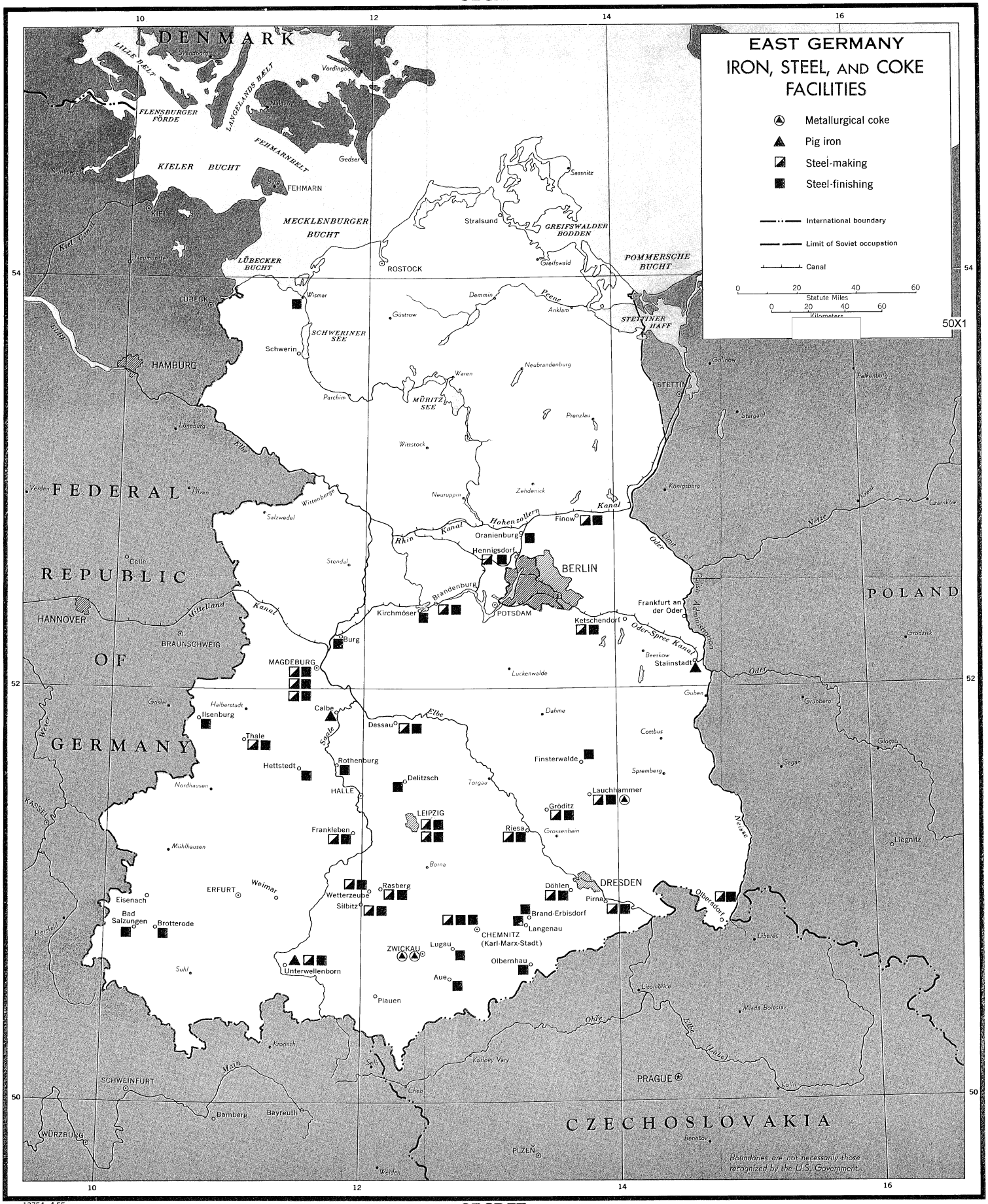

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